(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) **International Patent Classification:**
A01N 41/06 (2006.01)

(21) **International Application Number:**
PCT/EP2006/060988

(22) **International Filing Date:** 23 March 2006 (23.03.2006)

(25) **Filing Language:** English

(26) **Publication Language:** English

(30) **Priority Data:**
60/664,771   24 March 2005 (24.03.2005)   US

(71) **Applicant** *(for all designated States except US)*: **BASF Aktiengesellschaft** [DE/DE]; 67056 Ludwigshafen (DE).

(72) **Inventors; and**
(75) **Inventors/Applicants** *(for US only)*:   **VON DEYN, Wolfgang** [DE/DE]; An Der Bleiche 24, 67435 Neustadt (DE). **KAISER, Florian** [DE/DE]; Spelzenstr. 9, 68167 Mannheim (DE). **POHLMAN, Matthias** [DE/DE]; Bluntschlistr. 16, 69115 Heidelberg (DE). **BASTI-AANS, Henricus Maria Martinus** [NL/DE]; Bartholo-maeus-arnoldi-str. 35, 61250 Usingen (DE). **BAUMANN, Ernst** [DE/DE]; Falkenstr.6a, 67373 Dudenhofen (DE). **RACK, Michael** [DE/DE]; Hildastr. 11/1, 69214 Eppel-heim (DE). **ANSPAUGH, Douglas D.** [US/US]; 4007 Winecott Drive, Apex, Nc 27502 (US). **COTTER, Henry Van Tuyl** [US/US]; 8329 Lakewood Drive, Raleigh, Nc 27613 (US). **CULBERTSON, Deborah L.** [US/US]; 6400 Vintage Ridge Lane, Fuquay Varina, Nc 27526 (US).

HOFMANN, Michael [DE/DE]; Lutherstr. 2, 67059 Lud-wigshafen (DE). **HICKS, Carol** [US/US]; 8004 Looking Glass Ct., Raleigh, North Carolina 27612 (US).

(74) **Common Representative:** **BASF Aktiengesellschaft**; 67056 Ludwigshafen (DE).

(81) **Designated States** *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) **Designated States** *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— *without international search report and to be republished upon receipt of that report*

For two-letter codes and other abbreviations, refer to the "Guid-ance Notes on Codes and Abbreviations" appearing at the begin-ning of each regular issue of the PCT Gazette.

(54) **Title:** 2-CYANOBENZENESULFONAMIDE COMPOUNDS FOR SEED TREATMENT
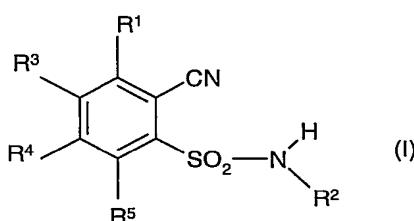
(57) **Abstract:** The present invention provides a method for the for the protec-tion of seeds from soil insects and of the resulting plant's roots and shoots from soil and foliar insects comprising contacting the seeds before sowing and/or af-ter pregermination with a 2- cyanobenzenesulfonamide compound of the general formula (I) where the variables R to R are as defined in claim 1.

2-cyanobenzenesulfonamide compounds for seed treatment

Description

5   The present invention provides a method for the for the protection of seeds from soil insects and of the resulting plant's roots and shoots from soil and foliar insects comprising contacting the seeds before sowing and/or after pregermination with a 2-cyanobenzenesulfonamide compound of the general formula I

(I)
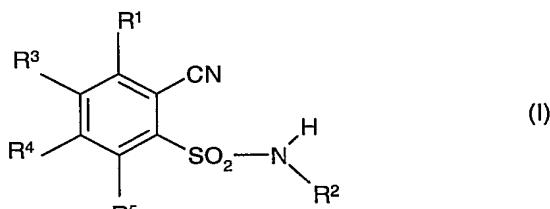
10

where

R^1 is C$_1$-C$_4$-alkyl, C$_1$-C$_4$-haloalkyl, C$_1$-C$_4$-alkoxy or C$_1$-C$_4$-haloalkoxy;

15

R^2 is hydrogen, C$_1$-C$_6$-alkyl, C$_2$-C$_6$-alkenyl, C$_2$-C$_6$-alkinyl, C$_3$-C$_8$-cycloalkyl or C$_1$-C$_4$-alkoxy, wherein the five last-mentioned radicals may be unsubstituted, partially or fully halogenated and/or may carry one, two, or three radicals selected from the group consisting of C$_1$-C$_4$-alkoxy, C$_1$-C$_4$-alkylthio, C$_1$-C$_4$-alkylsulfinyl, C$_1$-C$_4$-alkylsulfonyl, C$_1$-C$_4$-haloalkoxy, C$_1$-C$_4$-haloalkylthio, C$_1$-C$_4$-alkoxycarbonyl, cyano, amino, (C$_1$-C$_4$-alkyl)amino, di-(C$_1$-C$_4$-alkyl)amino, C$_3$-C$_8$-cycloalkyl and phenyl, it being possible for phenyl to be unsubstituted, partially or fully halogenated and/or to carry one, two or three substituents selected from the group consisting of C$_1$-C$_4$-alkyl, C$_1$-C$_4$-haloalkyl, C$_1$-C$_4$-alkoxy, C$_1$-C$_4$-haloalkoxy; and

25

R^3, R^4 and R^5 are independently of one another selected from the group consisting of hydrogen, halogen, cyano, nitro, C$_1$-C$_6$-alkyl, C$_3$-C$_8$-cycloalkyl, C$_1$-C$_4$-haloalkyl, C$_1$-C$_4$-alkoxy, C$_1$-C$_4$-alkylthio, C$_1$-C$_4$-alkylsulfinyl, C$_1$-C$_4$-alkylsulfonyl, C$_1$-C$_4$-haloalkoxy, C$_1$-C$_4$-haloalkylthio, C$_2$-C$_6$-alkenyl, C$_2$-C$_6$-alkinyl, C$_1$-C$_4$-alkoxycarbonyl, amino, (C$_1$-C$_4$-alkyl)amino, di-(C$_1$-C$_4$-alkyl)amino, aminocarbonyl, (C$_1$-C$_4$-alkyl)aminocarbonyl and di-(C$_1$-C$_4$-alkyl)aminocarbonyl;

or the enantiomers and or agriculturally acceptable salts.

35   The invention also relates to seed comprising compounds of formula I.

One of the problems the farmer is faced with is that seeds and plant roots and shoots are constantly threatened by foliar and soil insects and other pests.

Another difficulty in relation to the use of seed protection pesticides is that the repeated and exclusive application of an individual pesticidal compound leads in many cases to a rapid selection of soil pests, which have developed natural or adapted resistance against the active compound in question. Therefore there is a need for seed protection agents that help prevent or overcome resistance.

It was therefore an object of the present invention to provide compounds which solve the problems of protection of the protection of seeds and growing plants and/or reducing the dosage rate and / or enhancing the spectrum of activity and / or to resistance management.

We have found that these objects are in part or in whole achieved by a method for the protection of seeds from soil insects and of the resulting plant's roots and shoots from soil and foliar insects comprising contacting the seeds before sowing and/or after pre-germination with a compound of formula I.

The insecticidal activity in plant protection in the agricultural field of the compounds of formula I has been described in PCT/EP/04/011004.

However, PCT/EP/04/011004 does not mention a method for the protection of seeds, from soil insects and of the resulting plant's roots and shoots from soil and foliar insects comprising contacting the seeds before sowing and/or after pregermination with a 2-cyanobenzenesulfonamide compound I.

Surprisingly it has now been found that compounds of formula I are suitable for the protection of seeds from soil insects and of the resulting plant's roots and shoots from soil and foliar insects.

Salts of the compounds of the formula I which are suitable for the use according to the invention are especially agriculturally acceptable salts. They can be formed in a customary method, e.g. by reacting the compound with an acid of the anion in question.

Suitable agriculturally useful salts are especially the salts of those cations or the acid addition salts of those acids whose cations and anions, respectively, do not have any adverse effect on the action of the compounds according to the present invention, which are useful for combating harmful insects or arachnids. Thus, suitable cations are in particular the ions of the alkali metals, preferably lithium, sodium and potassium, of the alkaline earth metals, preferably calcium, magnesium and barium, and of the transition metals, preferably manganese, copper, zinc and iron, and also the ammonium ion which may, if desired, carry one to four C_1-C_4-alkyl substituents and/or one phenyl or benzyl substituent, preferably diisopropylammonium, tetramethylammonium, tetrabu-

tylammonium, trimethylbenzylammonium, furthermore phosphonium ions, sulfonium ions, preferably tri(C_1-C_4-alkyl)sulfonium, and sulfoxonium ions, preferably tri(C_1-C_4-alkyl)sulfoxonium.

5   Anions of useful acid addition salts are primarily chloride, bromide, fluoride, hydrogen sulfate, sulfate, dihydrogen phosphate, hydrogen phosphate, phosphate, nitrate, hydrogen carbonate, carbonate, hexafluorosilicate, hexafluorophosphate, benzoate, and the anions of C_1-C_4-alkanoic acids, preferably formate, acetate, propionate and butyrate. They can be formed by reacting the compounds of the formulae la and lb with
10   an acid of the corresponding anion, preferably of hydrochloric acid, hydrobromic acid, sulfuric acid, phosphoric acid or nitric acid.

The organic moieties mentioned in the above definitions of the variables are - like the term halogen — collective terms for individual listings of the individual group members.
15   The prefix C_n-C_m indicates in each case the possible number of carbon atoms in the group.

The term halogen denotes in each case fluorine, bromine, chlorine or iodine.

20   Examples of other meanings are :

The term "C_1-C_4-alkyl" as used herein and the alkyl moieties of alkylamino and dialkylamino refer to a saturated straight-chain or branched hydrocarbon radical having 1 to 4 carbon atoms, i.e., for example methyl, ethyl, propyl, 1-methylethyl, butyl, 1-
25   methylpropyl, 2-methylpropyl or 1,1-dimethylethyl.

The term "C_1-C_6-alkyl" as used herein refers to a saturated straight-chain or branched hydrocarbon radical having 1 to 6 carbon atoms, for example one of the radicals mentioned under C_1-C_4-alkyl and also n-pentyl, 1-methylbutyl, 2-methylbutyl, 3-methylbutyl,
30   2,2-dimethylpropyl, 1-ethylpropyl, n-hexyl, 1,1-dimethylpropyl, 1,2-dimethylpropyl, 1-methylpentyl, 2-methylpentyl, 3-methylpentyl, 4-methylpentyl, 1,1-dimethylbutyl, 1,2-dimethylbutyl, 1,3-dimethylbutyl, 2,2-dimethylbutyl, 2,3-dimethylbutyl, 3,3-dimethylbutyl, 1-ethylbutyl, 2-ethylbutyl, 1,1,2-trimethylpropyl, 1,2,2-trimethylpropyl, 1-ethyl-1-methylpropyl, 1-ethyl-2-methylpropyl.

35

The term "C_1-C_4-haloalkyl" as used herein refers to a straight-chain or branched saturated alkyl radical having 1 to 4 carbon atoms (as mentioned above), where some or all of the hydrogen atoms in these radicals may be replaced by fluorine, chlorine, bromine and/or iodine, i.e., for example chloromethyl, dichloromethyl, trichloromethyl, fluoro-
40   methyl, difluoromethyl, trifluoromethyl, chlorofluoromethyl, dichlorofluoromethyl, chloro-difluoromethyl, 2-fluoroethyl, 2-chloroethyl, 2-bromoethyl, 2-iodoethyl, 2,2-difluoroethyl, 2,2,2-trifluoroethyl, 2-chloro-2-fluoroethyl, 2-chloro-2,2-difluoroethyl, 2,2-dichloro-2-

fluoroethyl, 2,2,2-trichloroethyl, pentafluoroethyl, 2-fluoropropyl, 3-fluoropropyl, 2,2-difluoropropyl, 2,3-difluoropropyl, 2-chloropropyl, 3-chloropropyl, 2,3-dichloropropyl, 2-bromopropyl, 3-bromopropyl, 3,3,3-trifluoropropyl, 3,3,3-trichloropropyl, 2,2,3,3,3-pentafluoropropyl, heptafluoropropyl, 1-(fluoromethyl)-2-fluoroethyl, 1-(chloromethyl)-2-
5   chloroethyl, 1-(bromomethyl)-2-bromoethyl, 4-fluorobutyl, 4-chlorobutyl, 4-bromobutyl or nonafluorobutyl.

The term "C_1-C_2-fluoroalkyl" as used herein refers to a C_1-C_2-alkyl radical which carries 1, 2, 3, 4, or 5 fluorine atoms, for example difluoromethyl, trifluoromethyl, 1-fluoroethyl,
10   2-fluoroethyl, 2,2-difluoroethyl, 2,2,2-trifluoroethyl, 1,1,2,2-tetrafluoroethyl or penta-fluoroethyl.

The term "C_1-C_4-alkoxy" as used herein refers to a straight-chain or branched saturated alkyl radical having 1 to 4 carbon atoms (as mentioned above) which is attached via an
15   oxygen atom, i.e., for example methoxy, ethoxy, n-propoxy, 1-methylethoxy, n-butoxy, 1-methylpropoxy, 2-methylpropoxy or 1,1-dimethylethoxy.

The term "C_1-C_4-haloalkoxy" as used herein refers to a C_1–C_4–alkoxy radical as men-tioned above which is partially or fully substituted by fluorine, chlorine, bromine and/or
20   iodine, i.e., for example, chloromethoxy, dichloromethoxy, trichloromethoxy, fluoro-methoxy, difluoromethoxy, trifluoromethoxy, chlorofluoromethoxy, dichlorofluorometh-oxy, chlorodifluoromethoxy, 2-fluoroethoxy, 2-chloroethoxy, 2-bromoethoxy, 2-iodoethoxy, 2,2-difluoroethoxy, 2,2,2-trifluoroethoxy, 2-chloro-2-fluoroethoxy, 2-chloro-2,2-difluoroethoxy, 2,2-dichloro-2-fluoroethoxy, 2,2,2-trichloroethoxy, pentafluoroeth-
25   oxy, 2-fluoropropoxy, 3-fluoropropoxy, 2,2-difluoropropoxy, 2,3-difluoropropoxy, 2-chloropropoxy, 3-chloropropoxy, 2,3-dichloropropoxy, 2-bromopropoxy, 3-bromopropoxy, 3,3,3-trifluoropropoxy, 3,3,3-trichloropropoxy, 2,2,3,3,3-pentafluoropropoxy, heptafluoropropoxy, 1-(fluoromethyl)-2-fluoroethoxy, 1-(chloromethyl)-2-chloroethoxy, 1-(bromomethyl)-2-bromoethoxy, 4-fluorobutoxy, 4-
30   chlorobutoxy, 4-bromobutoxy or nonafluorobutoxy.

The term "C_1-C_4-alkylthio (C_1-C_4-alkylsulfanyl: C_1-C_4-alkyl-S-)" as used herein refers to a straight-chain or branched saturated alkyl radical having 1 to 4 carbon atoms (as mentioned above) which is attached via a sulfur atom, i.e., for example methylthio,
35   ethylthio, n-propylthio, 1-methylethylthio, butylthio, 1-methylpropylthio, 2-methylpropylthio or 1,1-dimethylethylthio.

The term "C_1-C_4-alkylsulfinyl" (C_1-C_4-alkyl-S(=O)-), as used herein refers to a straight-chain or branched saturated hydrocarbon radical (as mentioned above) having 1 to 4
40   carbon atoms bonded through the sulfur atom of the sulfinyl group at any bond in the alkyl radical, i.e., for example SO–CH_3, SO–C_2H_5, n-propylsulfinyl, 1-methylethyl-sulfinyl, n-butylsulfinyl, 1-methylpropylsulfinyl, 2-methylpropylsulfinyl, 1,1-dimethyl-

ethylsulfinyl, n-pentylsulfinyl, 1-methylbutylsulfinyl, 2-methylbutylsulfinyl, 3-methyl-butylsulfinyl, 1,1-dimethylpropylsulfinyl, 1,2-dimethylpropylsulfinyl, 2,2-dimethylpropylsulfinyl or 1-ethylpropylsulfinyl.

5   The term "C_1-C_4-alkylsulfonyl" (C_1-C_4-alkyl-$S(=O)_2$-) as used herein refers to a straight-chain or branched saturated alkyl radical having 1 to 4 carbon atoms (as mentioned above) which is bonded via the sulfur atom of the sulfonyl group at any bond in the alkyl radical, i. e., for example SO_2–CH_3, SO_2–C_2H_5, n-propylsulfonyl, SO_2–$CH(CH_3)_2$, n-butylsulfonyl, 1-methylpropylsulfonyl, 2-methylpropylsulfonyl or SO_2–$C(CH_3)_3$.

10

The term "C_1-C_4-haloalkylthio" as used herein refers to a C_1-C_4-alkylthio radical as mentioned above which is partially or fully substituted by fluorine, chlorine, bromine and/or iodine, i.e., for example, fluoromethylthio, difluoromethylthio, trifluoromethylthio, chlorodifluoromethylthio, bromodifluoromethylthio, 2-fluoroethylthio, 2-chloroethylthio,

15   2-bromoethylthio, 2-iodoethylthio, 2,2-difluoroethylthio, 2,2,2-trifluoroethylthio, 2,2,2-trichloroethylthio, 2-chloro-2-fluoroethylthio, 2-chloro-2,2-difluoroethylthio, 2,2-dichloro-2-fluoroethylthio, pentafluoroethylthio, 2-fluoropropylthio, 3-fluoropropylthio, 2-chloropropylthio, 3-chloropropylthio, 2-bromopropylthio, 3-bromopropylthio, 2,2-difluoropropylthio, 2,3-difluoropropylthio, 2,3-dichloropropylthio, 3,3,3-

20   trifluoropropylthio, 3,3,3-trichloropropylthio, 2,2,3,3,3-pentafluoropropylthio, hepta-fluoropropylthio, 1-(fluoromethyl)-2-fluoroethylthio, 1-(chloromethyl)-2-chloroethylthio, 1-(bromomethyl)-2-bromoethylthio, 4-fluorobutylthio, 4-chlorobutylthio, 4-bromobutylthio or nonafluorobutylthio.

25   The term "C_1-C_4-alkoxycarbonyl" as used herein refers to a straight-chain or branched alkoxy radical (as mentioned above) having 1 to 4 carbon atoms attached via the carbon atom of the carbonyl group, i.e., for example methoxycarbonyl, ethoxycarbonyl, n-propoxycarbonyl, 1-methylethoxycarbonyl, n-butoxycarbonyl, 1-methylpropoxycarbonyl, 2-methylpropoxycarbonyl or 1,1-dimethylethoxycarbonyl.

30

The term "(C_1-C_4-alkylamino)carbonyl as used herein refers to, for example, methyl-aminocarbonyl, ethylaminocarbonyl, propylaminocarbonyl, 1-methylethylaminocarbonyl, butylaminocarbonyl, 1-methylpropylaminocarbonyl, 2-methylpropylaminocarbonyl or 1,1-dimethylethylaminocarbonyl.

35

The term "di-(C_1-C_4-alkyl)aminocarbonyl" as used herein refers to, for example, N,N-dimethylaminocarbonyl, N,N-diethylaminocarbonyl, N,N-di-(1-methylethyl)aminocarbonyl, N,N-dipropylaminocarbonyl, N,N-dibutylaminocarbonyl, N,N-di-(1-methylpropyl)aminocarbonyl, N,N-di-(2-methylpropyl)aminocarbonyl, N,N-di-

40   (1,1-dimethylethyl)aminocarbonyl, N-ethyl-N-methylaminocarbonyl, N-methyl-N-propylaminocarbonyl, N-methyl-N-(1-methylethyl)aminocarbonyl, N-butyl-N-methylaminocarbonyl, N-methyl-N-(1-methylpropyl)aminocarbonyl, N-methyl-N-(2-

6

methylpropyl)aminocarbonyl, N-(1,1-dimethylethyl)-N-methylaminocarbonyl, N-ethyl-N-propylaminocarbonyl, N-ethyl-N-(1-methylethyl)aminocarbonyl, N-butyl-N-ethylaminocarbonyl, N-ethyl-N-(1-methylpropyl)aminocarbonyl, N-ethyl-N-(2-methylpropyl)aminocarbonyl, N-ethyl-N-(1,1-dimethylethyl)aminocarbonyl, N-(1-

5 methylethyl)-N-propylaminocarbonyl, N-butyl-N-propylaminocarbonyl, N-(1-methylpropyl)-N-propylaminocarbonyl, N-(2-methylpropyl)-N-propylaminocarbonyl, N-(1,1-dimethylethyl)-N-propylaminocarbonyl, N-butyl-N-(1-methylethyl)aminocarbonyl, N-(1-methylethyl)-N-(1-methylpropyl)aminocarbonyl, N-(1-methylethyl)-N-(2-methylpropyl)aminocarbonyl, N-(1,1-dimethylethyl)-N-(1-methylethyl)aminocarbonyl, N-

10 butyl-N-(1-methylpropyl)aminocarbonyl, N-butyl-N-(2-methylpropyl)aminocarbonyl, N-butyl-N-(1,1-dimethylethyl)aminocarbonyl, N-(1-methylpropyl)-N-(2-methylpropyl)aminocarbonyl, N-(1,1-dimethylethyl)-N-(1-methylpropyl)aminocarbonyl or N-(1,1-dimethylethyl)-N-(2-methylpropyl)aminocarbonyl.

15 The term "C_2-C_6-alkenyl" as used herein refers to a straight-chain or branched mono-unsaturated hydrocarbon radical having 2 to 6 carbon atoms and a double bond in any position, i.e., for example ethenyl, 1-propenyl, 2-propenyl, 1-methyl-ethenyl, 1-butenyl, 2-butenyl, 3-butenyl, 1-methyl-1-propenyl, 2-methyl-1-propenyl, 1-methyl-2-propenyl, 2-methyl-2-propenyl, 1-pentenyl, 2-pentenyl, 3-pentenyl, 4-pentenyl, 1-methyl-1-butenyl,

20 2-methyl-1-butenyl, 3-methyl-1-butenyl, 1-methyl-2-butenyl, 2-methyl-2-butenyl, 3-methyl-2-butenyl, 1-methyl-3-butenyl, 2-methyl-3-butenyl, 3-methyl-3-butenyl, 1,1-dimethyl-2-propenyl, 1,2-dimethyl-1-propenyl, 1,2-dimethyl-2-propenyl, 1-ethyl-1-propenyl, 1-ethyl-2-propenyl, 1-hexenyl, 2-hexenyl, 3-hexenyl, 4-hexenyl, 5-hexenyl, 1-methyl-1-pentenyl, 2-methyl-1-pentenyl, 3-methyl-1-pentenyl, 4-methyl-1-pentenyl, 1-

25 methyl-2-pentenyl, 2-methyl-2-pentenyl, 3-methyl-2-pentenyl, 4-methyl-2-pentenyl, 1-methyl-3-pentenyl, 2-methyl-3-pentenyl, 3-methyl-3-pentenyl, 4-methyl-3-pentenyl, 1-methyl-4-pentenyl, 2-methyl-4-pentenyl, 3-methyl-4-pentenyl, 4-methyl-4-pentenyl, 1,1-dimethyl-2-butenyl, 1,1-dimethyl-3-butenyl, 1,2-dimethyl-1-butenyl, 1,2-dimethyl-2-butenyl, 1,2-dimethyl-3-butenyl, 1,3-dimethyl-1-butenyl, 1,3-dimethyl-2-butenyl, 1,3-

30 dimethyl-3-butenyl, 2,2-dimethyl-3-butenyl, 2,3-dimethyl-1-butenyl, 2,3-dimethyl-2-butenyl, 2,3-dimethyl-3-butenyl, 3,3-dimethyl-1-butenyl, 3,3-dimethyl-2-butenyl, 1-ethyl-1-butenyl, 1-ethyl-2-butenyl, 1-ethyl-3-butenyl, 2-ethyl-1-butenyl, 2-ethyl-2-butenyl, 2-ethyl-3-butenyl, 1,1,2-trimethyl-2-propenyl, 1-ethyl-1-methyl-2-propenyl, 1-ethyl-2-methyl-1-propenyl and 1-ethyl-2-methyl-2-propenyl.

35

The term "C_2-C_6-alkynyl" as used herein refers to a straight-chain or branched aliphatic hydrocarbon radical which contains a C-C triple bond and has 2 to 6 carbons atoms: for example ethynyl, prop-1-yn-1-yl, prop-2-yn-1-yl, n-but-1-yn-1-yl, n-but-1-yn-3-yl, n-but-1-yn-4-yl, n-but-2-yn-1-yl, n-pent-1-yn-1-yl, n-pent-1-yn-3-yl, n-pent-1-yn-4-yl, n-pent-1-

40 yn-5-yl, n-pent-2-yn-1-yl, n-pent-2-yn-4-yl, n-pent-2-yn-5-yl, 3-methylbut-1-yn-3-yl, 3-methylbut-1-yn-4-yl, n-hex-1-yn-1-yl, n-hex-1-yn-3-yl, n-hex-1-yn-4-yl, n-hex-1-yn-5-yl, n-hex-1-yn-6-yl, n-hex-2-yn-1-yl, n-hex-2-yn-4-yl, n-hex-2-yn-5-yl, n-hex-2-yn-6-yl, n-

hex-3-yn-1-yl, n-hex-3-yn-2-yl, 3-methylpent-1-yn-1-yl, 3-methylpent-1-yn-3-yl, 3-
methylpent-1-yn-4-yl, 3-methylpent-1-yn-5-yl, 4-methylpent-1-yn-1-yl, 4-methylpent-2-
yn-4-yl or 4-methylpent-2-yn-5-yl and the like.

5 The term "C_3-C_8-cycloalkyl" as used herein refers to a monocyclic hydrocarbon radical
having 3 to 8 carbon atoms, for example cyclopropyl, cyclobutyl, cyclopentyl, cyclo-
hexyl, cycloheptyl or cyclooctyl.

Among the 2-cyanobenzenesulfonamide compounds of the general formula I, prefer-
10 ence is given to those in which the variables R^1 and R^2, independently of one another,
but in particular in combination, have the meanings given below:

R^1 is C_1-C_2-alkyl, especially methyl, or C_1-C_2-alkoxy, especially methoxy; or C_1-C_2-
        haloalkoxy, especially difluormethoxy
15 R^2 is hydrogen or a linear, cyclic or branched-chain hydrocarbon radical having from
        1 to 4 carbon atoms e.g. C_1-C_4-alkyl, in particular methyl, ethyl, n-propyl, 1-
        methylethyl, cyclopropyl, C_1-C_4-haloalkyl, in particular 2-difluorethyl, C_1-C_4-
        alkoxy-C_1-C_4-alkyl, in particular 2-methoxyethyl, C_1-C_4-alkylthio-C_1-C_4-alkyl, in
        particular 2-methylthioethyl or C_2-C_4-alkinyl, in particular prop-2-yn-1-yl
20   (propargyl). Most preferred are compounds I wherein R^2 is selected from methyl,
        ethyl, 1-methylethyl and prop-2-yn-1-yl.

For the purpose of the present invention, preference is also given to 2-
cyanobenzenesulfonamide compounds of the general formula I, wherein R^1 is C_1-C_4-
25 haloalkoxy, in particular C_1-haloalkoxy, especially trifluoromethoxy, difluoromethoxy or
chlorodifluoromethoxy. In these compounds R^2 has the meanings given above, pref-
erably hydrogen or a linear, cyclic or branched-chain hydrocarbon radical having from 1
to 4 carbon atoms e.g. C_1-C_4-alkyl, in particular methyl, ethyl, n-propyl, 1-methylethyl,
cyclopropyl, C_1-C_4-alkoxy-C_1-C_4-alkyl, in particular 2-methoxyethyl, C_1-C_4-alkylthio-C_1-
30 C_4-alkyl, in particular 2-methylthioethyl or C_2-C_4-alkinyl, in particular prop-2-yn-1-yl
(propargyl). Most preferred are compounds I wherein R^2 is selected from methyl, ethyl,
1-methylethyl and prop-2-yn-1-yl.

In a preferred embodiment of the present invention the variables R^1 and R^2 of the 2-
35 cyanobenzene-sulfonamide compounds of the general formula I have the meanings
mentioned above and in particular the meanings given as being preferred and at least
one of the radicals R^3, R^4 or R^5 is different from hydrogen. Preferably one or two of the
radicals R^3, R^4 and R^5 represent hydrogen. Amongst these compounds preference is
given to those compounds wherein R^3 is different from hydrogen and preferably repre-
40 sents halogen, especially chlorine or fluorine, and the other radicals R^4 and R^5 are hy-
drogen.

8

In another preferred embodiment of the present invention the variables R^1 and R^2 of the 2-cyanobenzenesulfonamide compounds of the general formula I have the meanings mentioned above and in particular the meanings given as being preferred and each of the radicals R^3, R^4 and R^5 represent hydrogen.

5

In another preferred embodiment of the present invention the variables R^2 has the meaning mentioned above and in particular the meanings given as being preferred, R^1 represents difluormethoxy and each of the radicals R^3, R^4 and R^5 represent hydrogen.

10   Examples of preferred compounds of the formula I for the purpose of the present invention comprise those compounds which are given in the following tables A1 to A16, wherein R^3, R^4, R^5 are as defined in the tables and wherein R^1 and R^2 are given in the rows of table A:

15   Table A1:   Compounds of the formula I, wherein each of R^3, R^4 and R^5 are hydrogen and R^1 and R^2 are as defined in one row of table A

Table A2:   Compounds of the formula I, wherein R^3 is chlorine R^4 and R^5 are hydrogen and R^1 and R^2 are as defined in one row of table A

20

Table A3:   Compounds of the formula I, wherein R^3 is fluorine R^4 and R^5 are hydrogen and R^1 and R^2 are as defined in one row of table A

Table A4:   Compounds of the formula I, wherein R^3 is bromine R^4 and R^5 are hydrogen

25   and R^1 and R^2 are as defined in one row of table A

Table A5:   Compounds of the formula I, wherein R^3 is iodine, R^4 and R^5 are hydrogen and R^1 and R^2 are as defined in one row of table A

30   Table A6:   Compounds of the formula I, wherein R^3 is CH_3, R^4 and R^5 are hydrogen and R^1 and R^2 are as defined in one row of table A

Table A7:   Compounds of the formula I, wherein R^4 is chlorine R^3 and R^5 are hydrogen and R^1 and R^2 are as defined in one row of table A

35

Table A8:   Compounds of the formula I, wherein R^4 is fluorine R^3 and R^5 are hydrogen and R^1 and R^2 are as defined in one row of table A

Table A9:   Compounds of the formula I, wherein R^4 is bromine R^3 and R^5 are hydrogen

40   and R^1 and R^2 are as defined in one row of table A

Table A10: Compounds of the formula I, wherein R^4 is iodine, R^3 and R^5 are hydrogen and R^1 and R^2 are as defined in one row of table A

Table A11: Compounds of the formula I, wherein R^4 is CH_3, R^3 and R^5 are hydrogen and R^1 and R^2 are as defined in one row of table A

Table A12: Compounds of the formula I, wherein R^5 is chlorine R^3 and R^4 are hydrogen and R^1 and R^2 are as defined in one row of table A

Table A13: Compounds of the formula I, wherein R^5 is fluorine R^3 and R^4 are hydrogen and R^1 and R^2 are as defined in one row of table A

Table A14: Compounds of the formula I, wherein R^5 is bromine R^3 and R^4 are hydrogen and R^1 and R^2 are as defined in one row of table A

Table A15: Compounds of the formula I, wherein R^5 is iodine, R^3 and R^4 are hydrogen and R^1 and R^2 are as defined in one row of table A

Table A16: Compounds of the formula I, wherein R^5 is CH_3, R^3 and R^4 are hydrogen and R^1 and R^2 are as defined in one row of table A

Table A:

	R^1	R^2
1.	CH_3	H
2.	CH_3	CH_3
3.	CH_3	CH_3CH_2-
4.	CH_3	$(CH_3)_2CH-$
5.	CH_3	$CH_3CH_2CH_2-$
6.	CH_3	$n-C_4H_9$
7.	CH_3	$(CH_3)_3C-$
8.	CH_3	$(CH_3)_2CH-CH_2-$
9.	CH_3	$n-C_5H_{11}$
10.	CH_3	$(CH_3)_2CH-CH_2-CH_2-$
11.	CH_3	$(C_2H_5)_2-CH-$
12.	CH_3	$(CH_3)_3C-CH_2-$
13.	CH_3	$(CH_3)_3C-CH_2-CH_2-$
14.	CH_3	$C_2H_5CH(CH_3)-CH_2-$
15.	CH_3	$CH_3-CH_2-C(CH_3)_2-$
16.	CH_3	$(CH_3)_2CH-CH(CH_3)-$
17.	CH_3	$(CH_3)_3C-CH(CH_3)-$
18.	CH_3	$(CH_3)_2CH-CH_2-CH(CH_3)-$
19.	CH_3	$CH_3-CH_2-C(CH_3)(C_2H_5)-$

	R^1	R^2
20.	CH_3	$CH_3-CH_2-CH_2-C(CH_3)_2-$
21.	CH_3	$C_2H_5-CH_2-CH(CH_3)-CH_2-$
22.	CH_3	cyclopropyl
23.	CH_3	cyclopropyl-CH_2-
24.	CH_3	cyclopropyl-$CH(CH_3)-$
25.	CH_3	cyclobutyl
26.	CH_3	cyclopentyl
27.	CH_3	cyclohexyl
28.	CH_3	$HC\equiv C-CH_2-$
29.	CH_3	$HC\equiv C-CH(CH_3)-$
30.	CH_3	$HC\equiv C-C(CH_3)_2-$
31.	CH_3	$HC\equiv C-C(CH_3)(C_2H_5)-$
32.	CH_3	$HC\equiv C-C(CH_3)(C_3H_7)-$
33.	CH_3	$CH_2=CH-CH_2-$
34.	CH_3	$H_2C=CH-CH(CH_3)-$
35.	CH_3	$H_2C=CH-C(CH_3)_2-$
36.	CH_3	$H_2C=CH-C(C_2H_5)(CH_3)-$
37.	CH_3	$C_6H_5-CH_2-$
38.	CH_3	$4-(CH_3)_3C-C_6H_4-CH_2-$
39.	CH_3	$C_6H_5-CH_2-$
40.	CH_3	$4-(CH_3)_3C-C_6H_4-CH_2-$
41.	CH_3	$4-Cl-C_6H_4-CH_2-$
42.	CH_3	$3-(CH_3O)-C_6H_4-CH_2-$
43.	CH_3	$4-(CH_3O)-C_6H_4-CH_2-$
44.	CH_3	$2-(CH_3O)-C_6H_4-CH_2-$
45.	CH_3	$3-Cl-C_6H_4-CH_2-$
46.	CH_3	$2-Cl-C_6H_4-CH_2-$
47.	CH_3	$4-(F_3C)-C_6H_4-CH_2-$
48.	CH_3	$NC-CH_2-$
49.	CH_3	$NC-CH_2-CH_2-$
50.	CH_3	$NC-CH_2-CH(CH_3)-$
51.	CH_3	$NC-CH_2-C(CH_3)_2-$
52.	CH_3	$NC-CH_2-CH_2-CH_2-$
53.	CH_3	FH_2C-CH_2-
54.	CH_3	ClH_2C-CH_2-
55.	CH_3	BrH_2C-CH_2-
56.	CH_3	$FH_2C-CH(CH_3)-$
57.	CH_3	$ClH_2C-CH(CH_3)-$
58.	CH_3	$BrH_2C-CH(CH_3)-$
59.	CH_3	F_2HC-CH_2-
60.	CH_3	F_3C-CH_2-
61.	CH_3	$FH_2C-CH_2-CH_2-$

11

	R¹	R²
62.	CH_3	$ClH_2C-CH_2-CH_2-$
63.	CH_3	$BrH_2C-CH_2-CH_2-$
64.	CH_3	$F_2HC-CH_2-CH_2-$
65.	CH_3	$F_3C-CH_2-CH_2-$
66.	CH_3	$CH_3-O-CH_2-CH_2-$
67.	CH_3	$CH_3-S-CH_2-CH_2-$
68.	CH_3	$CH_3-SO_2-CH_2-CH_2-$
69.	CH_3	$C_2H_5-O-CH_2-CH_2-$
70.	CH_3	$(CH_3)_2CH-O-CH_2-CH_2-$
71.	CH_3	$C_2H_5-S-CH_2-CH_2-$
72.	CH_3	$C_2H_5-SO_2-CH_2-CH_2-$
73.	CH_3	$(CH_3)_2N-CH_2-CH_2-$
74.	CH_3	$(C_2H_5)_2N-CH_2-CH_2-$
75.	CH_3	$[(CH_3)_2CH]_2N-CH_2-CH_2-$
76.	CH_3	$CH_3-O-CH_2-CH(CH_3)-$
77.	CH_3	$CH_3-S-CH_2-CH(CH_3)-$
78.	CH_3	$CH_3-SO_2-CH_2-CH(CH_3)-$
79.	CH_3	$C_2H_5-O-CH_2-CH(CH_3)-$
80.	CH_3	$C_2H_5-S-CH_2-CH(CH_3)-$
81.	CH_3	$C_2H_5-SO_2-CH_2-CH(CH_3)-$
82.	CH_3	$(CH_3)_2N-CH_2-CH(CH_3)-$
83.	CH_3	$(C_2H_5)_2N-CH_2-CH(CH_3)-$
84.	CH_3	$[(CH_3)_2CH]_2N-CH_2-CH(CH_3)-$
85.	CH_3	$CH_3-O-CH(CH_3)-CH_2-$
86.	CH_3	$CH_3-S-CH(CH_3)-CH_2-$
87.	CH_3	$CH_3-SO_2-CH(CH_3)-CH_2-$
88.	CH_3	$C_2H_5-O-CH(CH_3)-CH_2-$
89.	CH_3	$C_2H_5-S-CH(CH_3)-CH_2-$
90.	CH_3	$C_2H_5-SO_2-CH(CH_3)-CH_2-$
91.	CH_3	$(CH_3)_2N-CH(CH_3)-CH_2-$
92.	CH_3	$(C_2H_5)_2N-CH(CH_3)-CH_2-$
93.	CH_3	$[(CH_3)_2CH]_2N-CH(CH_3)-CH_2-$
94.	CH_3	$CH_3-O-CH_2-CH_2-CH_2-$
95.	CH_3	$CH_3-S-CH_2-CH_2-CH_2-$
96.	CH_3	$CH_3-SO_2-CH_2-CH_2-CH_2-$
97.	CH_3	$C_2H_5-O-CH_2-CH_2-CH_2-$
98.	CH_3	$C_2H_5-S-CH_2-CH_2-CH_2-$
99.	CH_3	$C_2H_5-SO_2-CH_2-CH_2-CH_2-$
100.	CH_3	$(CH_3)_2N-CH_2-CH_2-CH_2-$
101.	CH_3	$(C_2H_5)_2N-CH_2-CH_2-CH_2-$

	R^1	R^2
102.	CH_3	CH_3-O-CH_2-C(CH_3)$_2$-
103.	CH_3	CH_3-S-CH_2-C(CH_3)$_2$-
104.	CH_3	CH_3-SO_2-CH_2-C(CH_3)$_2$-
105.	CH_3	C_2H_5-O-CH_2-C(CH_3)$_2$-
106.	CH_3	C_2H_5-S-CH_2-C(CH_3)$_2$-
107.	CH_3	C_2H_5-SO_2-CH_2-C(CH_3)$_2$-
108.	CH_3	(CH_3)$_2$N-CH_2-C(CH_3)$_2$-
109.	CH_3	(C_2H_5)$_2$N-CH_2-C(CH_3)$_2$-
110.	CH_3	[(CH_3)$_2$CH]$_2$N-CH_2-C(CH_3)$_2$-
111.	CH_3	Cl-CH_2-C≡C-CH_2-
112.	CH_3	CH_3-O-C(O)-CH_2
113.	CH_3	C_2H_5-O-C(O)-CH_2
114.	CH_3	CH_3-O-C(O)-CH(CH_3)-
115.	CH_3	C_2H_5-O-C(O)-CH(CH_3)-
116.	CH_3	(CH_3O)$_2$CH-CH_2-
117.	CH_3	(C_2H_5O)$_2$CH-CH_2-
118.	C_2H_5	H
119.	C_2H_5	CH_3
120.	C_2H_5	CH_3CH_2-
121.	C_2H_5	(CH_3)$_2$CH-
122.	C_2H_5	$CH_3CH_2CH_2$-
123.	C_2H_5	n-C_4H_9
124.	C_2H_5	(CH_3)$_3$C-
125.	C_2H_5	(CH_3)$_2$CH-CH_2-
126.	C_2H_5	n-C_5H_{11}
127.	C_2H_5	(CH_3)$_2$CH-CH_2-CH_2-
128.	C_2H_5	(C_2H_5)$_2$-CH-
129.	C_2H_5	(CH_3)$_3$C-CH_2-
130.	C_2H_5	(CH_3)$_3$C-CH_2-CH_2-
131.	C_2H_5	C_2H_5CH(CH_3)-CH_2-
132.	C_2H_5	CH_3-CH_2-C(CH_3)$_2$-
133.	C_2H_5	(CH_3)$_2$CH-CH(CH_3)-
134.	C_2H_5	(CH_3)$_3$C-CH(CH_3)-
135.	C_2H_5	(CH_3)$_2$CH-CH_2-CH(CH_3)-
136.	C_2H_5	CH_3-CH_2-C(CH_3)(C_2H_5)-
137.	C_2H_5	CH_3-CH_2-CH_2-C(CH_3)$_2$-
138.	C_2H_5	C_2H_5-CH_2-CH(CH_3)-CH_2-
139.	C_2H_5	cyclopropyl
140.	C_2H_5	cyclopropyl-CH_2-
141.	C_2H_5	cyclopropyl-CH(CH_3)-

	R^1	R^2
142.	C_2H_5	cyclobutyl
143.	C_2H_5	cyclopentyl
144.	C_2H_5	cyclohexyl
145.	C_2H_5	$HC \equiv C\text{-}CH_2\text{-}$
146.	C_2H_5	$HC \equiv C\text{-}CH(CH_3)\text{-}$
147.	C_2H_5	$HC \equiv C\text{-}C(CH_3)_2\text{-}$
148.	C_2H_5	$HC \equiv C\text{-}C(CH_3)(C_2H_5)\text{-}$
149.	C_2H_5	$HC \equiv C\text{-}C(CH_3)(C_3H_7)\text{-}$
150.	C_2H_5	$CH_2 = CH\text{-}CH_2\text{-}$
151.	C_2H_5	$H_2C = CH\text{-}CH(CH_3)\text{-}$
152.	C_2H_5	$H_2C = CH\text{-}C(CH_3)_2\text{-}$
153.	C_2H_5	$H_2C = CH\text{-}C(C_2H_5)(CH_3)\text{-}$
154.	C_2H_5	$C_6H_5\text{-}CH_2\text{-}$
155.	C_2H_5	$4\text{-}(CH_3)_3C\text{-}C_6H_4\text{-}CH_2\text{-}$
156.	C_2H_5	$C_6H_5\text{-}CH_2\text{-}$
157.	C_2H_5	$4\text{-}(CH_3)_3C\text{-}C_6H_4\text{-}CH_2\text{-}$
158.	C_2H_5	$4\text{-}Cl\text{-}C_6H_4\text{-}CH_2\text{-}$
159.	C_2H_5	$3\text{-}(CH_3O)\text{-}C_6H_4\text{-}CH_2\text{-}$
160.	C_2H_5	$4\text{-}(CH_3O)\text{-}C_6H_4\text{-}CH_2\text{-}$
161.	C_2H_5	$2\text{-}(CH_3O)\text{-}C_6H_4\text{-}CH_2\text{-}$
162.	C_2H_5	$3\text{-}Cl\text{-}C_6H_4\text{-}CH_2\text{-}$
163.	C_2H_5	$2\text{-}Cl\text{-}C_6H_4\text{-}CH_2\text{-}$
164.	C_2H_5	$4\text{-}(F_3C)\text{-}C_6H_4\text{-}CH_2\text{-}$
165.	C_2H_5	$NC\text{-}CH_2\text{-}$
166.	C_2H_5	$NC\text{-}CH_2\text{-}CH_2\text{-}$
167.	C_2H_5	$NC\text{-}CH_2\text{-}CH(CH_3)\text{-}$
168.	C_2H_5	$NC\text{-}CH_2\text{-}C(CH_3)_2\text{-}$
169.	C_2H_5	$NC\text{-}CH_2\text{-}CH_2\text{-}CH_2\text{-}$
170.	C_2H_5	$FH_2C\text{-}CH_2\text{-}$
171.	C_2H_5	$ClH_2C\text{-}CH_2\text{-}$
172.	C_2H_5	$BrH_2C\text{-}CH_2\text{-}$
173.	C_2H_5	$FH_2C\text{-}CH(CH_3)\text{-}$
174.	C_2H_5	$ClH_2C\text{-}CH(CH_3)\text{-}$
175.	C_2H_5	$BrH_2C\text{-}CH(CH_3)\text{-}$
176.	C_2H_5	$F_2HC\text{-}CH_2\text{-}$
177.	C_2H_5	$F_3C\text{-}CH_2\text{-}$
178.	C_2H_5	$FH_2C\text{-}CH_2\text{-}CH_2\text{-}$
179.	C_2H_5	$ClH_2C\text{-}CH_2\text{-}CH_2\text{-}$
180.	C_2H_5	$BrH_2C\text{-}CH_2\text{-}CH_2\text{-}$
181.	C_2H_5	$F_2HC\text{-}CH_2\text{-}CH_2\text{-}$

	R^1	R^2
182.	C$_2$H$_5$	F$_3$C-CH$_2$-CH$_2$-
183.	C$_2$H$_5$	CH$_3$-O-CH$_2$-CH$_2$-
184.	C$_2$H$_5$	CH$_3$-S-CH$_2$-CH$_2$-
185.	C$_2$H$_5$	CH$_3$-SO$_2$-CH$_2$-CH$_2$-
186.	C$_2$H$_5$	C$_2$H$_5$-O-CH$_2$-CH$_2$-
187.	C$_2$H$_5$	(CH$_3$)$_2$CH-O-CH$_2$-CH$_2$-
188.	C$_2$H$_5$	C$_2$H$_5$-S-CH$_2$-CH$_2$-
189.	C$_2$H$_5$	C$_2$H$_5$-SO$_2$-CH$_2$-CH$_2$-
190.	C$_2$H$_5$	(CH$_3$)$_2$N-CH$_2$-CH$_2$-
191.	C$_2$H$_5$	(C$_2$H$_5$)$_2$N-CH$_2$-CH$_2$-
192.	C$_2$H$_5$	[(CH$_3$)$_2$CH]$_2$N-CH$_2$-CH$_2$-
193.	C$_2$H$_5$	CH$_3$-O-CH$_2$-CH(CH$_3$)-
194.	C$_2$H$_5$	CH$_3$-S-CH$_2$-CH(CH$_3$)-
195.	C$_2$H$_5$	CH$_3$-SO$_2$-CH$_2$-CH(CH$_3$)-
196.	C$_2$H$_5$	C$_2$H$_5$-O-CH$_2$-CH(CH$_3$)-
197.	C$_2$H$_5$	C$_2$H$_5$-S-CH$_2$-CH(CH$_3$)-
198.	C$_2$H$_5$	C$_2$H$_5$-SO$_2$-CH$_2$-CH(CH$_3$)-
199.	C$_2$H$_5$	(CH$_3$)$_2$N-CH$_2$-CH(CH$_3$)-
200.	C$_2$H$_5$	(C$_2$H$_5$)$_2$N-CH$_2$-CH(CH$_3$)-
201.	C$_2$H$_5$	[(CH$_3$)$_2$CH]$_2$N-CH$_2$-CH(CH$_3$)-
202.	C$_2$H$_5$	CH$_3$-O-CH(CH$_3$)-CH$_2$-
203.	C$_2$H$_5$	CH$_3$-S-CH(CH$_3$)-CH$_2$-
204.	C$_2$H$_5$	CH$_3$-SO$_2$-CH(CH$_3$)-CH$_2$-
205.	C$_2$H$_5$	C$_2$H$_5$-O-CH(CH$_3$)-CH$_2$-
206.	C$_2$H$_5$	C$_2$H$_5$-S-CH(CH$_3$)-CH$_2$-
207.	C$_2$H$_5$	C$_2$H$_5$-SO$_2$-CH(CH$_3$)-CH$_2$-
208.	C$_2$H$_5$	(CH$_3$)$_2$N-CH(CH$_3$)-CH$_2$-
209.	C$_2$H$_5$	(C$_2$H$_5$)$_2$N-CH(CH$_3$)-CH$_2$-
210.	C$_2$H$_5$	[(CH$_3$)$_2$CH]$_2$N-CH(CH$_3$)-CH$_2$-
211.	C$_2$H$_5$	CH$_3$-O-CH$_2$-CH$_2$-CH$_2$-
212.	C$_2$H$_5$	CH$_3$-S-CH$_2$-CH$_2$-CH$_2$-
213.	C$_2$H$_5$	CH$_3$-SO$_2$-CH$_2$-CH$_2$-CH$_2$-
214.	C$_2$H$_5$	C$_2$H$_5$-O-CH$_2$-CH$_2$-CH$_2$-
215.	C$_2$H$_5$	C$_2$H$_5$-S-CH$_2$-CH$_2$-CH$_2$-
216.	C$_2$H$_5$	C$_2$H$_5$-SO$_2$-CH$_2$-CH$_2$-CH$_2$-
217.	C$_2$H$_5$	(CH$_3$)$_2$N-CH$_2$-CH$_2$-CH$_2$-
218.	C$_2$H$_5$	(C$_2$H$_5$)$_2$N-CH$_2$-CH$_2$-CH$_2$-
219.	C$_2$H$_5$	CH$_3$-O-CH$_2$-C(CH$_3$)$_2$-
220.	C$_2$H$_5$	CH$_3$-S-CH$_2$-C(CH$_3$)$_2$-
221.	C$_2$H$_5$	CH$_3$-SO$_2$-CH$_2$-C(CH$_3$)$_2$-

	R^1	R^2
222.	C$_2$H$_5$	C$_2$H$_5$-O-CH$_2$-C(CH$_3$)$_2$-
223.	C$_2$H$_5$	C$_2$H$_5$-S-CH$_2$-C(CH$_3$)$_2$-
224.	C$_2$H$_5$	C$_2$H$_5$-SO$_2$-CH$_2$-C(CH$_3$)$_2$-
225.	C$_2$H$_5$	(CH$_3$)$_2$N-CH$_2$-C(CH$_3$)$_2$-
226.	C$_2$H$_5$	(C$_2$H$_5$)$_2$N-CH$_2$-C(CH$_3$)$_2$-
227.	C$_2$H$_5$	[(CH$_3$)$_2$CH]$_2$N-CH$_2$-C(CH$_3$)$_2$-
228.	C$_2$H$_5$	Cl-CH$_2$-C≡C-CH$_2$-
229.	C$_2$H$_5$	CH$_3$-O-C(O)-CH$_2$
230.	C$_2$H$_5$	C$_2$H$_5$-O-C(O)-CH$_2$
231.	C$_2$H$_5$	CH$_3$-O-C(O)-CH(CH$_3$)-
232.	C$_2$H$_5$	C$_2$H$_5$-O-C(O)-CH(CH$_3$)-
233.	C$_2$H$_5$	(CH$_3$O)$_2$CH-CH$_2$-
234.	C$_2$H$_5$	(C$_2$H$_5$O)$_2$CH-CH$_2$-
235.	OCH$_3$	H
236.	OCH$_3$	CH$_3$
237.	OCH$_3$	CH$_3$CH$_2$-
238.	OCH$_3$	(CH$_3$)$_2$CH-
239.	OCH$_3$	CH$_3$CH$_2$CH$_2$-
240.	OCH$_3$	n-C$_4$H$_9$
241.	OCH$_3$	(CH$_3$)$_3$C-
242.	OCH$_3$	(CH$_3$)$_2$CH-CH$_2$-
243.	OCH$_3$	n-C$_5$H$_{11}$
244.	OCH$_3$	(CH$_3$)$_2$CH-CH$_2$-CH$_2$-
245.	OCH$_3$	(C$_2$H$_5$)$_2$-CH-
246.	OCH$_3$	(CH$_3$)$_3$C-CH$_2$-
247.	OCH$_3$	(CH$_3$)$_3$C-CH$_2$-CH$_2$-
248.	OCH$_3$	C$_2$H$_5$CH(CH$_3$)-CH$_2$-
249.	OCH$_3$	CH$_3$-CH$_2$-C(CH$_3$)$_2$-
250.	OCH$_3$	(CH$_3$)$_2$CH-CH(CH$_3$)-
251.	OCH$_3$	(CH$_3$)$_3$C-CH(CH$_3$)-
252.	OCH$_3$	(CH$_3$)$_2$CH-CH$_2$-CH(CH$_3$)-
253.	OCH$_3$	CH$_3$-CH$_2$-C(CH$_3$)(C$_2$H$_5$)-
254.	OCH$_3$	CH$_3$-CH$_2$-CH$_2$-C(CH$_3$)$_2$-
255.	OCH$_3$	C$_2$H$_5$-CH$_2$-CH(CH$_3$)-CH$_2$-
256.	OCH$_3$	cyclopropyl
257.	OCH$_3$	cyclopropyl-CH$_2$-
258.	OCH$_3$	cyclopropyl-CH(CH$_3$)-
259.	OCH$_3$	cyclobutyl
260.	OCH$_3$	cyclopentyl
261.	OCH$_3$	cyclohexyl

	R^1	R^2
262.	OCH_3	$HC{\equiv}C\text{-}CH_2\text{-}$
263.	OCH_3	$HC{\equiv}C\text{-}CH(CH_3)\text{-}$
264.	OCH_3	$HC{\equiv}C\text{-}C(CH_3)_2\text{-}$
265.	OCH_3	$HC{\equiv}C\text{-}C(CH_3)(C_2H_5)\text{-}$
266.	OCH_3	$HC{\equiv}C\text{-}C(CH_3)(C_3H_7)\text{-}$
267.	OCH_3	$CH_2{=}CH\text{-}CH_2\text{-}$
268.	OCH_3	$H_2C{=}CH\text{-}CH(CH_3)\text{-}$
269.	OCH_3	$H_2C{=}CH\text{-}C(CH_3)_2\text{-}$
270.	OCH_3	$H_2C{=}CH\text{-}C(C_2H_5)(CH_3)\text{-}$
271.	OCH_3	$C_6H_5\text{-}CH_2\text{-}$
272.	OCH_3	$4\text{-}(CH_3)_3C\text{-}C_6H_4\text{-}CH_2\text{-}$
273.	OCH_3	$C_6H_5\text{-}CH_2\text{-}$
274.	OCH_3	$4\text{-}(CH_3)_3C\text{-}C_6H_4\text{-}CH_2\text{-}$
275.	OCH_3	$4\text{-}Cl\text{-}C_6H_4\text{-}CH_2\text{-}$
276.	OCH_3	$3\text{-}(CH_3O)\text{-}C_6H_4\text{-}CH_2\text{-}$
277.	OCH_3	$4\text{-}(CH_3O)\text{-}C_6H_4\text{-}CH_2\text{-}$
278.	OCH_3	$2\text{-}(CH_3O)\text{-}C_6H_4\text{-}CH_2\text{-}$
279.	OCH_3	$3\text{-}Cl\text{-}C_6H_4\text{-}CH_2\text{-}$
280.	OCH_3	$2\text{-}Cl\text{-}C_6H_4\text{-}CH_2\text{-}$
281.	OCH_3	$4\text{-}(F_3C)\text{-}C_6H_4\text{-}CH_2\text{-}$
282.	OCH_3	$NC\text{-}CH_2\text{-}$
283.	OCH_3	$NC\text{-}CH_2\text{-}CH_2\text{-}$
284.	OCH_3	$NC\text{-}CH_2\text{-}CH(CH_3)\text{-}$
285.	OCH_3	$NC\text{-}CH_2\text{-}C(CH_3)_2\text{-}$
286.	OCH_3	$NC\text{-}CH_2\text{-}CH_2\text{-}CH_2\text{-}$
287.	OCH_3	$FH_2C\text{-}CH_2\text{-}$
288.	OCH_3	$ClH_2C\text{-}CH_2\text{-}$
289.	OCH_3	$BrH_2C\text{-}CH_2\text{-}$
290.	OCH_3	$FH_2C\text{-}CH(CH_3)\text{-}$
291.	OCH_3	$ClH_2C\text{-}CH(CH_3)\text{-}$
292.	OCH_3	$BrH_2C\text{-}CH(CH_3)\text{-}$
293.	OCH_3	$F_2HC\text{-}CH_2\text{-}$
294.	OCH_3	$F_3C\text{-}CH_2\text{-}$
295.	OCH_3	$FH_2C\text{-}CH_2\text{-}CH_2\text{-}$
296.	OCH_3	$ClH_2C\text{-}CH_2\text{-}CH_2\text{-}$
297.	OCH_3	$BrH_2C\text{-}CH_2\text{-}CH_2\text{-}$
298.	OCH_3	$F_2HC\text{-}CH_2\text{-}CH_2\text{-}$
299.	OCH_3	$F_3C\text{-}CH_2\text{-}CH_2\text{-}$
300.	OCH_3	$CH_3\text{-}O\text{-}CH_2\text{-}CH_2\text{-}$
301.	OCH_3	$CH_3\text{-}S\text{-}CH_2\text{-}CH_2\text{-}$

	R^1	R^2
302.	OCH$_3$	CH$_3$-SO$_2$-CH$_2$-CH$_2$-
303.	OCH$_3$	C$_2$H$_5$-O-CH$_2$-CH$_2$-
304.	OCH$_3$	(CH$_3$)$_2$CH-O-CH$_2$-CH$_2$-
305.	OCH$_3$	C$_2$H$_5$-S-CH$_2$-CH$_2$-
306.	OCH$_3$	C$_2$H$_5$-SO$_2$-CH$_2$-CH$_2$-
307.	OCH$_3$	(CH$_3$)$_2$N-CH$_2$-CH$_2$-
308.	OCH$_3$	(C$_2$H$_5$)$_2$N-CH$_2$-CH$_2$-
309.	OCH$_3$	[(CH$_3$)$_2$CH]$_2$N-CH$_2$-CH$_2$-
310.	OCH$_3$	CH$_3$-O-CH$_2$-CH(CH$_3$)-
311.	OCH$_3$	CH$_3$-S-CH$_2$-CH(CH$_3$)-
312.	OCH$_3$	CH$_3$-SO$_2$-CH$_2$-CH(CH$_3$)-
313.	OCH$_3$	C$_2$H$_5$-O-CH$_2$-CH(CH$_3$)-
314.	OCH$_3$	C$_2$H$_5$-S-CH$_2$-CH(CH$_3$)-
315.	OCH$_3$	C$_2$H$_5$-SO$_2$-CH$_2$-CH(CH$_3$)-
316.	OCH$_3$	(CH$_3$)$_2$N-CH$_2$-CH(CH$_3$)-
317.	OCH$_3$	(C$_2$H$_5$)$_2$N-CH$_2$-CH(CH$_3$)-
318.	OCH$_3$	[(CH$_3$)$_2$CH]$_2$N-CH$_2$-CH(CH$_3$)-
319.	OCH$_3$	CH$_3$-O-CH(CH$_3$)-CH$_2$-
320.	OCH$_3$	CH$_3$-S-CH(CH$_3$)-CH$_2$-
321.	OCH$_3$	CH$_3$-SO$_2$-CH(CH$_3$)-CH$_2$-
322.	OCH$_3$	C$_2$H$_5$-O-CH(CH$_3$)-CH$_2$-
323.	OCH$_3$	C$_2$H$_5$-S-CH(CH$_3$)-CH$_2$-
324.	OCH$_3$	C$_2$H$_5$-SO$_2$-CH(CH$_3$)-CH$_2$-
325.	OCH$_3$	(CH$_3$)$_2$N-CH(CH$_3$)-CH$_2$-
326.	OCH$_3$	(C$_2$H$_5$)$_2$N-CH(CH$_3$)-CH$_2$-
327.	OCH$_3$	[(CH$_3$)$_2$CH]$_2$N-CH(CH$_3$)-CH$_2$-
328.	OCH$_3$	CH$_3$-O-CH$_2$-CH$_2$-CH$_2$-
329.	OCH$_3$	CH$_3$-S-CH$_2$-CH$_2$-CH$_2$-
330.	OCH$_3$	CH$_3$-SO$_2$-CH$_2$-CH$_2$-CH$_2$-
331.	OCH$_3$	C$_2$H$_5$-O-CH$_2$-CH$_2$-CH$_2$-
332.	OCH$_3$	C$_2$H$_5$-S-CH$_2$-CH$_2$-CH$_2$-
333.	OCH$_3$	C$_2$H$_5$-SO$_2$-CH$_2$-CH$_2$-CH$_2$-
334.	OCH$_3$	(CH$_3$)$_2$N-CH$_2$-CH$_2$-CH$_2$-
335.	OCH$_3$	(C$_2$H$_5$)$_2$N-CH$_2$-CH$_2$-CH$_2$-
336.	OCH$_3$	CH$_3$-O-CH$_2$-C(CH$_3$)$_2$-
337.	OCH$_3$	CH$_3$-S-CH$_2$-C(CH$_3$)$_2$-
338.	OCH$_3$	CH$_3$-SO$_2$-CH$_2$-C(CH$_3$)$_2$-
339.	OCH$_3$	C$_2$H$_5$-O-CH$_2$-C(CH$_3$)$_2$-
340.	OCH$_3$	C$_2$H$_5$-S-CH$_2$-C(CH$_3$)$_2$-
341.	OCH$_3$	C$_2$H$_5$-SO$_2$-CH$_2$-C(CH$_3$)$_2$-

	R^1	R^2
342.	OCH$_3$	(CH$_3$)$_2$N-CH$_2$-C(CH$_3$)$_2$-
343.	OCH$_3$	(C$_2$H$_5$)$_2$N-CH$_2$-C(CH$_3$)$_2$-
344.	OCH$_3$	[(CH$_3$)$_2$CH]$_2$N-CH$_2$-C(CH$_3$)$_2$-
345.	OCH$_3$	Cl-CH$_2$-C≡C-CH$_2$-
346.	OCH$_3$	CH$_3$-O-C(O)-CH$_2$
347.	OCH$_3$	C$_2$H$_5$-O-C(O)-CH$_2$
348.	OCH$_3$	CH$_3$-O-C(O)-CH(CH$_3$)-
349.	OCH$_3$	C$_2$H$_5$-O-C(O)-CH(CH$_3$)-
350.	OCH$_3$	(CH$_3$O)$_2$CH-CH$_2$-
351.	OCH$_3$	(C$_2$H$_5$O)$_2$CH-CH$_2$-
352.	OC$_2$H$_5$	H
353.	OC$_2$H$_5$	CH$_3$
354.	OC$_2$H$_5$	CH$_3$CH$_2$-
355.	OC$_2$H$_5$	(CH$_3$)$_2$CH-
356.	OC$_2$H$_5$	CH$_3$CH$_2$CH$_2$-
357.	OC$_2$H$_5$	n-C$_4$H$_9$
358.	OC$_2$H$_5$	(CH$_3$)$_3$C-
359.	OC$_2$H$_5$	(CH$_3$)$_2$CH-CH$_2$-
360.	OC$_2$H$_5$	n-C$_5$H$_{11}$
361.	OC$_2$H$_5$	(CH$_3$)$_2$CH-CH$_2$-CH$_2$-
362.	OC$_2$H$_5$	(C$_2$H$_5$)$_2$-CH-
363.	OC$_2$H$_5$	(CH$_3$)$_3$C-CH$_2$-
364.	OC$_2$H$_5$	(CH$_3$)$_3$C-CH$_2$-CH$_2$-
365.	OC$_2$H$_5$	C$_2$H$_5$CH(CH$_3$)-CH$_2$-
366.	OC$_2$H$_5$	CH$_3$-CH$_2$-C(CH$_3$)$_2$-
367.	OC$_2$H$_5$	(CH$_3$)$_2$CH-CH(CH$_3$)-
368.	OC$_2$H$_5$	(CH$_3$)$_3$C-CH(CH$_3$)-
369.	OC$_2$H$_5$	(CH$_3$)$_2$CH-CH$_2$-CH(CH$_3$)-
370.	OC$_2$H$_5$	CH$_3$-CH$_2$-C(CH$_3$)(C$_2$H$_5$)-
371.	OC$_2$H$_5$	CH$_3$-CH$_2$-CH$_2$-C(CH$_3$)$_2$-
372.	OC$_2$H$_5$	C$_2$H$_5$-CH$_2$-CH(CH$_3$)-CH$_2$-
373.	OC$_2$H$_5$	cyclopropyl
374.	OC$_2$H$_5$	cyclopropyl-CH$_2$-
375.	OC$_2$H$_5$	cyclopropyl-CH(CH$_3$)-
376.	OC$_2$H$_5$	cyclobutyl
377.	OC$_2$H$_5$	cyclopentyl
378.	OC$_2$H$_5$	cyclohexyl
379.	OC$_2$H$_5$	HC≡C-CH$_2$-
380.	OC$_2$H$_5$	HC≡C-CH(CH$_3$)-
381.	OC$_2$H$_5$	HC≡C-C(CH$_3$)$_2$-

	R^1	R^2
382.	OC_2H_5	$HC{\equiv}C-C(CH_3)(C_2H_5)-$
383.	OC_2H_5	$HC{\equiv}C-C(CH_3)(C_3H_7)-$
384.	OC_2H_5	$CH_2{=}CH-CH_2-$
385.	OC_2H_5	$H_2C{=}CH-CH(CH_3)-$
386.	OC_2H_5	$H_2C{=}CH-C(CH_3)_2-$
387.	OC_2H_5	$H_2C{=}CH-C(C_2H_5)(CH_3)-$
388.	OC_2H_5	$C_6H_5-CH_2-$
389.	OC_2H_5	$4-(CH_3)_3C-C_6H_4-CH_2-$
390.	OC_2H_5	$C_6H_5-CH_2-$
391.	OC_2H_5	$4-(CH_3)_3C-C_6H_4-CH_2-$
392.	OC_2H_5	$4-Cl-C_6H_4-CH_2-$
393.	OC_2H_5	$3-(CH_3O)-C_6H_4-CH_2-$
394.	OC_2H_5	$4-(CH_3O)-C_6H_4-CH_2-$
395.	OC_2H_5	$2-(CH_3O)-C_6H_4-CH_2-$
396.	OC_2H_5	$3-Cl-C_6H_4-CH_2-$
397.	OC_2H_5	$2-Cl-C_6H_4-CH_2-$
398.	OC_2H_5	$4-(F_3C)-C_6H_4-CH_2-$
399.	OC_2H_5	$NC-CH_2-$
400.	OC_2H_5	$NC-CH_2-CH_2-$
401.	OC_2H_5	$NC-CH_2-CH(CH_3)-$
402.	OC_2H_5	$NC-CH_2-C(CH_3)_2-$
403.	OC_2H_5	$NC-CH_2-CH_2-CH_2-$
404.	OC_2H_5	FH_2C-CH_2-
405.	OC_2H_5	ClH_2C-CH_2-
406.	OC_2H_5	BrH_2C-CH_2-
407.	OC_2H_5	$FH_2C-CH(CH_3)-$
408.	OC_2H_5	$ClH_2C-CH(CH_3)-$
409.	OC_2H_5	$BrH_2C-CH(CH_3)-$
410.	OC_2H_5	F_2HC-CH_2-
411.	OC_2H_5	F_3C-CH_2-
412.	OC_2H_5	$FH_2C-CH_2-CH_2-$
413.	OC_2H_5	$ClH_2C-CH_2-CH_2-$
414.	OC_2H_5	$BrH_2C-CH_2-CH_2-$
415.	OC_2H_5	$F_2HC-CH_2-CH_2-$
416.	OC_2H_5	$F_3C-CH_2-CH_2-$
417.	OC_2H_5	$CH_3-O-CH_2-CH_2-$
418.	OC_2H_5	$CH_3-S-CH_2-CH_2-$
419.	OC_2H_5	$CH_3-SO_2-CH_2-CH_2-$
420.	OC_2H_5	$C_2H_5-O-CH_2-CH_2-$
421.	OC_2H_5	$(CH_3)_2CH-O-CH_2-CH_2-$

	R¹	R²
422.	OC$_2$H$_5$	C$_2$H$_5$-S-CH$_2$-CH$_2$-
423.	OC$_2$H$_5$	C$_2$H$_5$-SO$_2$-CH$_2$-CH$_2$-
424.	OC$_2$H$_5$	(CH$_3$)$_2$N-CH$_2$-CH$_2$-
425.	OC$_2$H$_5$	(C$_2$H$_5$)$_2$N-CH$_2$-CH$_2$-
426.	OC$_2$H$_5$	[(CH$_3$)$_2$CH]$_2$N-CH$_2$-CH$_2$-
427.	OC$_2$H$_5$	CH$_3$-O-CH$_2$-CH(CH$_3$)-
428.	OC$_2$H$_5$	CH$_3$-S-CH$_2$-CH(CH$_3$)-
429.	OC$_2$H$_5$	CH$_3$-SO$_2$-CH$_2$-CH(CH$_3$)-
430.	OC$_2$H$_5$	C$_2$H$_5$-O-CH$_2$-CH(CH$_3$)-
431.	OC$_2$H$_5$	C$_2$H$_5$-S-CH$_2$-CH(CH$_3$)-
432.	OC$_2$H$_5$	C$_2$H$_5$-SO$_2$-CH$_2$-CH(CH$_3$)-
433.	OC$_2$H$_5$	(CH$_3$)$_2$N-CH$_2$-CH(CH$_3$)-
434.	OC$_2$H$_5$	(C$_2$H$_5$)$_2$N-CH$_2$-CH(CH$_3$)-
435.	OC$_2$H$_5$	[(CH$_3$)$_2$CH]$_2$N-CH$_2$-CH(CH$_3$)-
436.	OC$_2$H$_5$	CH$_3$-O-CH(CH$_3$)-CH$_2$-
437.	OC$_2$H$_5$	CH$_3$-S-CH(CH$_3$)-CH$_2$-
438.	OC$_2$H$_5$	CH$_3$-SO$_2$-CH(CH$_3$)-CH$_2$-
439.	OC$_2$H$_5$	C$_2$H$_5$-O-CH(CH$_3$)-CH$_2$-
440.	OC$_2$H$_5$	C$_2$H$_5$-S-CH(CH$_3$)-CH$_2$-
441.	OC$_2$H$_5$	C$_2$H$_5$-SO$_2$-CH(CH$_3$)-CH$_2$-
442.	OC$_2$H$_5$	(CH$_3$)$_2$N-CH(CH$_3$)-CH$_2$-
443.	OC$_2$H$_5$	(C$_2$H$_5$)$_2$N-CH(CH$_3$)-CH$_2$-
444.	OC$_2$H$_5$	[(CH$_3$)$_2$CH]$_2$N-CH(CH$_3$)-CH$_2$-
445.	OC$_2$H$_5$	CH$_3$-O-CH$_2$-CH$_2$-CH$_2$-
446.	OC$_2$H$_5$	CH$_3$-S-CH$_2$-CH$_2$-CH$_2$-
447.	OC$_2$H$_5$	CH$_3$-SO$_2$-CH$_2$-CH$_2$-CH$_2$-
448.	OC$_2$H$_5$	C$_2$H$_5$-O-CH$_2$-CH$_2$-CH$_2$-
449.	OC$_2$H$_5$	C$_2$H$_5$-S-CH$_2$-CH$_2$-CH$_2$-
450.	OC$_2$H$_5$	C$_2$H$_5$-SO$_2$-CH$_2$-CH$_2$-CH$_2$-
451.	OC$_2$H$_5$	(CH$_3$)$_2$N-CH$_2$-CH$_2$-CH$_2$-
452.	OC$_2$H$_5$	(C$_2$H$_5$)$_2$N-CH$_2$-CH$_2$-CH$_2$-
453.	OC$_2$H$_5$	CH$_3$-O-CH$_2$-C(CH$_3$)$_2$-
454.	OC$_2$H$_5$	CH$_3$-S-CH$_2$-C(CH$_3$)$_2$-
455.	OC$_2$H$_5$	CH$_3$-SO$_2$-CH$_2$-C(CH$_3$)$_2$-
456.	OC$_2$H$_5$	C$_2$H$_5$-O-CH$_2$-C(CH$_3$)$_2$-
457.	OC$_2$H$_5$	C$_2$H$_5$-S-CH$_2$-C(CH$_3$)$_2$-
458.	OC$_2$H$_5$	C$_2$H$_5$-SO$_2$-CH$_2$-C(CH$_3$)$_2$-
459.	OC$_2$H$_5$	(CH$_3$)$_2$N-CH$_2$-C(CH$_3$)$_2$-
460.	OC$_2$H$_5$	(C$_2$H$_5$)$_2$N-CH$_2$-C(CH$_3$)$_2$-
461.	OC$_2$H$_5$	[(CH$_3$)$_2$CH]$_2$N-CH$_2$-C(CH$_3$)$_2$-

	R^1	R^2
462.	OC_2H_5	$Cl-CH_2-C\equiv C-CH_2-$
463.	OC_2H_5	$CH_3-O-C(O)-CH_2$
464.	OC_2H_5	$C_2H_5-O-C(O)-CH_2$
465.	OC_2H_5	$CH_3-O-C(O)-CH(CH_3)-$
466.	OC_2H_5	$C_2H_5-O-C(O)-CH(CH_3)-$
467.	OC_2H_5	$(CH_3O)_2CH-CH_2-$
468.	OC_2H_5	$(C_2H_5O)_2CH-CH_2-$
469.	CF_3	H
470.	CF_3	CH_3
471.	CF_3	CH_3CH_2-
472.	CF_3	$(CH_3)_2CH-$
473.	CF_3	$CH_3CH_2CH_2-$
474.	CF_3	$n-C_4H_9$
475.	CF_3	$(CH_3)_3C-$
476.	CF_3	$(CH_3)_2CH-CH_2-$
477.	CF_3	$n-C_5H_{11}$
478.	CF_3	$(CH_3)_2CH-CH_2-CH_2-$
479.	CF_3	$(C_2H_5)_2-CH-$
480.	CF_3	$(CH_3)_3C-CH_2-$
481.	CF_3	$(CH_3)_3C-CH_2-CH_2-$
482.	CF_3	$C_2H_5CH(CH_3)-CH_2-$
483.	CF_3	$CH_3-CH_2-C(CH_3)_2-$
484.	CF_3	$(CH_3)_2CH-CH(CH_3)-$
485.	CF_3	$(CH_3)_3C-CH(CH_3)-$
486.	CF_3	$(CH_3)_2CH-CH_2-CH(CH_3)-$
487.	CF_3	$CH_3-CH_2-C(CH_3)(C_2H_5)-$
488.	CF_3	$CH_3-CH_2-CH_2-C(CH_3)_2-$
489.	CF_3	$C_2H_5-CH_2-CH(CH_3)-CH_2-$
490.	CF_3	cyclopropyl
491.	CF_3	cyclopropyl-CH_2-
492.	CF_3	cyclopropyl-$CH(CH_3)-$
493.	CF_3	cyclobutyl
494.	CF_3	cyclopentyl
495.	CF_3	cyclohexyl
496.	CF_3	$HC\equiv C-CH_2-$
497.	CF_3	$HC\equiv C-CH(CH_3)-$
498.	CF_3	$HC\equiv C-C(CH_3)_2-$
499.	CF_3	$HC\equiv C-C(CH_3)(C_2H_5)-$
500.	CF_3	$HC\equiv C-C(CH_3)(C_3H_7)-$
501.	CF_3	$CH_2=CH-CH_2-$

	R^1	R^2
502.	CF_3	$H_2C=CH-CH(CH_3)-$
503.	CF_3	$H_2C=CH-C(CH_3)_2-$
504.	CF_3	$H_2C=CH-C(C_2H_5)(CH_3)-$
505.	CF_3	$C_6H_5-CH_2-$
506.	CF_3	$4-(CH_3)_3C-C_6H_4-CH_2-$
507.	CF_3	$C_6H_5-CH_2-$
508.	CF_3	$4-(CH_3)_3C-C_6H_4-CH_2-$
509.	CF_3	$4-Cl-C_6H_4-CH_2-$
510.	CF_3	$3-(CH_3O)-C_6H_4-CH_2-$
511.	CF_3	$4-(CH_3O)-C_6H_4-CH_2-$
512.	CF_3	$2-(CH_3O)-C_6H_4-CH_2-$
513.	CF_3	$3-Cl-C_6H_4-CH_2-$
514.	CF_3	$2-Cl-C_6H_4-CH_2-$
515.	CF_3	$4-(F_3C)-C_6H_4-CH_2-$
516.	CF_3	$NC-CH_2-$
517.	CF_3	$NC-CH_2-CH_2-$
518.	CF_3	$NC-CH_2-CH(CH_3)-$
519.	CF_3	$NC-CH_2-C(CH_3)_2-$
520.	CF_3	$NC-CH_2-CH_2-CH_2-$
521.	CF_3	FH_2C-CH_2-
522.	CF_3	ClH_2C-CH_2-
523.	CF_3	BrH_2C-CH_2-
524.	CF_3	$FH_2C-CH(CH_3)-$
525.	CF_3	$ClH_2C-CH(CH_3)-$
526.	CF_3	$BrH_2C-CH(CH_3)-$
527.	CF_3	F_2HC-CH_2-
528.	CF_3	F_3C-CH_2-
529.	CF_3	$FH_2C-CH_2-CH_2-$
530.	CF_3	$ClH_2C-CH_2-CH_2-$
531.	CF_3	$BrH_2C-CH_2-CH_2-$
532.	CF_3	$F_2HC-CH_2-CH_2-$
533.	CF_3	$F_3C-CH_2-CH_2-$
534.	CF_3	$CH_3-O-CH_2-CH_2-$
535.	CF_3	$CH_3-S-CH_2-CH_2-$
536.	CF_3	$CH_3-SO_2-CH_2-CH_2-$
537.	CF_3	$C_2H_5-O-CH_2-CH_2-$
538.	CF_3	$(CH_3)_2CH-O-CH_2-CH_2-$
539.	CF_3	$C_2H_5-S-CH_2-CH_2-$
540.	CF_3	$C_2H_5-SO_2-CH_2-CH_2-$
541.	CF_3	$(CH_3)_2N-CH_2-CH_2-$

	R^1	R^2
542.	CF$_3$	(C$_2$H$_5$)$_2$N-CH$_2$-CH$_2$-
543.	CF$_3$	[(CH$_3$)$_2$CH]$_2$N-CH$_2$-CH$_2$-
544.	CF$_3$	CH$_3$-O-CH$_2$-CH(CH$_3$)-
545.	CF$_3$	CH$_3$-S-CH$_2$-CH(CH$_3$)-
546.	CF$_3$	CH$_3$-SO$_2$-CH$_2$-CH(CH$_3$)-
547.	CF$_3$	C$_2$H$_5$-O-CH$_2$-CH(CH$_3$)-
548.	CF$_3$	C$_2$H$_5$-S-CH$_2$-CH(CH$_3$)-
549.	CF$_3$	C$_2$H$_5$-SO$_2$-CH$_2$-CH(CH$_3$)-
550.	CF$_3$	(CH$_3$)$_2$N-CH$_2$-CH(CH$_3$)-
551.	CF$_3$	(C$_2$H$_5$)$_2$N-CH$_2$-CH(CH$_3$)-
552.	CF$_3$	[(CH$_3$)$_2$CH]$_2$N-CH$_2$-CH(CH$_3$)-
553.	CF$_3$	CH$_3$-O-CH(CH$_3$)-CH$_2$-
554.	CF$_3$	CH$_3$-S-CH(CH$_3$)-CH$_2$-
555.	CF$_3$	CH$_3$-SO$_2$-CH(CH$_3$)-CH$_2$-
556.	CF$_3$	C$_2$H$_5$-O-CH(CH$_3$)-CH$_2$-
557.	CF$_3$	C$_2$H$_5$-S-CH(CH$_3$)-CH$_2$-
558.	CF$_3$	C$_2$H$_5$-SO$_2$-CH(CH$_3$)-CH$_2$-
559.	CF$_3$	(CH$_3$)$_2$N-CH(CH$_3$)-CH$_2$-
560.	CF$_3$	(C$_2$H$_5$)$_2$N-CH(CH$_3$)-CH$_2$-
561.	CF$_3$	[(CH$_3$)$_2$CH]$_2$N-CH(CH$_3$)-CH$_2$-
562.	CF$_3$	CH$_3$-O-CH$_2$-CH$_2$-CH$_2$-
563.	CF$_3$	CH$_3$-S-CH$_2$-CH$_2$-CH$_2$-
564.	CF$_3$	CH$_3$-SO$_2$-CH$_2$-CH$_2$-CH$_2$-
565.	CF$_3$	C$_2$H$_5$-O-CH$_2$-CH$_2$-CH$_2$-
566.	CF$_3$	C$_2$H$_5$-S-CH$_2$-CH$_2$-CH$_2$-
567.	CF$_3$	C$_2$H$_5$-SO$_2$-CH$_2$-CH$_2$-CH$_2$-
568.	CF$_3$	(CH$_3$)$_2$N-CH$_2$-CH$_2$-CH$_2$-
569.	CF$_3$	(C$_2$H$_5$)$_2$N-CH$_2$-CH$_2$-CH$_2$-
570.	CF$_3$	CH$_3$-O-CH$_2$-C(CH$_3$)$_2$-
571.	CF$_3$	CH$_3$-S-CH$_2$-C(CH$_3$)$_2$-
572.	CF$_3$	CH$_3$-SO$_2$-CH$_2$-C(CH$_3$)$_2$-
573.	CF$_3$	C$_2$H$_5$-O-CH$_2$-C(CH$_3$)$_2$-
574.	CF$_3$	C$_2$H$_5$-S-CH$_2$-C(CH$_3$)$_2$-
575.	CF$_3$	C$_2$H$_5$-SO$_2$-CH$_2$-C(CH$_3$)$_2$-
576.	CF$_3$	(CH$_3$)$_2$N-CH$_2$-C(CH$_3$)$_2$-
577.	CF$_3$	(C$_2$H$_5$)$_2$N-CH$_2$-C(CH$_3$)$_2$-
578.	CF$_3$	[(CH$_3$)$_2$CH]$_2$N-CH$_2$-C(CH$_3$)$_2$-
579.	CF$_3$	Cl-CH$_2$-C≡C-CH$_2$-
580.	CF$_3$	CH$_3$-O-C(O)-CH$_2$
581.	CF$_3$	C$_2$H$_5$-O-C(O)-CH$_2$

	R^1	R^2
582.	CF_3	$CH_3\text{-}O\text{-}C(O)\text{-}CH(CH_3)\text{-}$
583.	CF_3	$C_2H_5\text{-}O\text{-}C(O)\text{-}CH(CH_3)\text{-}$
584.	CF_3	$(CH_3O)_2CH\text{-}CH_2\text{-}$
585.	CF_3	$(C_2H_5O)_2CH\text{-}CH_2\text{-}$
586.	$OCHF_2$	H
587.	$OCHF_2$	CH_3
588.	$OCHF_2$	$CH_3CH_2\text{-}$
589.	$OCHF_2$	$(CH_3)_2CH\text{-}$
590.	$OCHF_2$	$CH_3CH_2CH_2\text{-}$
591.	$OCHF_2$	$n\text{-}C_4H_9$
592.	$OCHF_2$	$(CH_3)_3C\text{-}$
593.	$OCHF_2$	$(CH_3)_2CH\text{-}CH_2\text{-}$
594.	$OCHF_2$	$n\text{-}C_5H_{11}$
595.	$OCHF_2$	$(CH_3)_2CH\text{-}CH_2\text{-}CH_2\text{-}$
596.	$OCHF_2$	$(C_2H_5)_2\text{-}CH\text{-}$
597.	$OCHF_2$	$(CH_3)_3C\text{-}CH_2\text{-}$
598.	$OCHF_2$	$(CH_3)_3C\text{-}CH_2\text{-}CH_2\text{-}$
599.	$OCHF_2$	$C_2H_5CH(CH_3)\text{-}CH_2\text{-}$
600.	$OCHF_2$	$CH_3\text{-}CH_2\text{-}C(CH_3)_2\text{-}$
601.	$OCHF_2$	$(CH_3)_2CH\text{-}CH(CH_3)\text{-}$
602.	$OCHF_2$	$(CH_3)_3C\text{-}CH(CH_3)\text{-}$
603.	$OCHF_2$	$(CH_3)_2CH\text{-}CH_2\text{-}CH(CH_3)\text{-}$
604.	$OCHF_2$	$CH_3\text{-}CH_2\text{-}C(CH_3)(C_2H_5)\text{-}$
605.	$OCHF_2$	$CH_3\text{-}CH_2\text{-}CH_2\text{-}C(CH_3)_2\text{-}$
606.	$OCHF_2$	$C_2H_5\text{-}CH_2\text{-}CH(CH_3)\text{-}CH_2\text{-}$
607.	$OCHF_2$	cyclopropyl
608.	$OCHF_2$	cyclopropyl-CH_2-
609.	$OCHF_2$	cyclopropyl-$CH(CH_3)$-
610.	$OCHF_2$	cyclobutyl
611.	$OCHF_2$	cyclopentyl
612.	$OCHF_2$	cyclohexyl
613.	$OCHF_2$	$HC{\equiv}C\text{-}CH_2\text{-}$
614.	$OCHF_2$	$HC{\equiv}C\text{-}CH(CH_3)\text{-}$
615.	$OCHF_2$	$HC{\equiv}C\text{-}C(CH_3)_2\text{-}$
616.	$OCHF_2$	$HC{\equiv}C\text{-}C(CH_3)(C_2H_5)\text{-}$
617.	$OCHF_2$	$HC{\equiv}C\text{-}C(CH_3)(C_3H_7)\text{-}$
618.	$OCHF_2$	$CH_2{=}CH\text{-}CH_2\text{-}$
619.	$OCHF_2$	$H_2C{=}CH\text{-}CH(CH_3)\text{-}$
620.	$OCHF_2$	$H_2C{=}CH\text{-}C(CH_3)_2\text{-}$
621.	$OCHF_2$	$H_2C{=}CH\text{-}C(C_2H_5)(CH_3)\text{-}$

	R^1	R^2
622.	$OCHF_2$	$C_6H_5\text{-}CH_2\text{-}$
623.	$OCHF_2$	$4\text{-}(CH_3)_3C\text{-}C_6H_4\text{-}CH_2\text{-}$
624.	$OCHF_2$	$C_6H_5\text{-}CH_2\text{-}$
625.	$OCHF_2$	$4\text{-}(CH_3)_3C\text{-}C_6H_4\text{-}CH_2\text{-}$
626.	$OCHF_2$	$4\text{-}Cl\text{-}C_6H_4\text{-}CH_2\text{-}$
627.	$OCHF_2$	$3\text{-}(CH_3O)\text{-}C_6H_4\text{-}CH_2\text{-}$
628.	$OCHF_2$	$4\text{-}(CH_3O)\text{-}C_6H_4\text{-}CH_2\text{-}$
629.	$OCHF_2$	$2\text{-}(CH_3O)\text{-}C_6H_4\text{-}CH_2\text{-}$
630.	$OCHF_2$	$3\text{-}Cl\text{-}C_6H_4\text{-}CH_2\text{-}$
631.	$OCHF_2$	$2\text{-}Cl\text{-}C_6H_4\text{-}CH_2\text{-}$
632.	$OCHF_2$	$4\text{-}(F_3C)\text{-}C_6H_4\text{-}CH_2\text{-}$
633.	$OCHF_2$	$NC\text{-}CH_2\text{-}$
634.	$OCHF_2$	$NC\text{-}CH_2\text{-}CH_2\text{-}$
635.	$OCHF_2$	$NC\text{-}CH_2\text{-}CH(CH_3)\text{-}$
636.	$OCHF_2$	$NC\text{-}CH_2\text{-}C(CH_3)_2\text{-}$
637.	$OCHF_2$	$NC\text{-}CH_2\text{-}CH_2\text{-}CH_2\text{-}$
638.	$OCHF_2$	$FH_2C\text{-}CH_2\text{-}$
639.	$OCHF_2$	$ClH_2C\text{-}CH_2\text{-}$
640.	$OCHF_2$	$BrH_2C\text{-}CH_2\text{-}$
641.	$OCHF_2$	$FH_2C\text{-}CH(CH_3)\text{-}$
642.	$OCHF_2$	$ClH_2C\text{-}CH(CH_3)\text{-}$
643.	$OCHF_2$	$BrH_2C\text{-}CH(CH_3)\text{-}$
644.	$OCHF_2$	$F_2HC\text{-}CH_2\text{-}$
645.	$OCHF_2$	$F_3C\text{-}CH_2\text{-}$
646.	$OCHF_2$	$FH_2C\text{-}CH_2\text{-}CH_2\text{-}$
647.	$OCHF_2$	$ClH_2C\text{-}CH_2\text{-}CH_2\text{-}$
648.	$OCHF_2$	$BrH_2C\text{-}CH_2\text{-}CH_2\text{-}$
649.	$OCHF_2$	$F_2HC\text{-}CH_2\text{-}CH_2\text{-}$
650.	$OCHF_2$	$F_3C\text{-}CH_2\text{-}CH_2\text{-}$
651.	$OCHF_2$	$CH_3\text{-}O\text{-}CH_2\text{-}CH_2\text{-}$
652.	$OCHF_2$	$CH_3\text{-}S\text{-}CH_2\text{-}CH_2\text{-}$
653.	$OCHF_2$	$CH_3\text{-}SO_2\text{-}CH_2\text{-}CH_2\text{-}$
654.	$OCHF_2$	$C_2H_5\text{-}O\text{-}CH_2\text{-}CH_2\text{-}$
655.	$OCHF_2$	$(CH_3)_2CH\text{-}O\text{-}CH_2\text{-}CH_2\text{-}$
656.	$OCHF_2$	$C_2H_5\text{-}S\text{-}CH_2\text{-}CH_2\text{-}$
657.	$OCHF_2$	$C_2H_5\text{-}SO_2\text{-}CH_2\text{-}CH_2\text{-}$
658.	$OCHF_2$	$(CH_3)_2N\text{-}CH_2\text{-}CH_2\text{-}$
659.	$OCHF_2$	$(C_2H_5)_2N\text{-}CH_2\text{-}CH_2\text{-}$
660.	$OCHF_2$	$[(CH_3)_2CH]_2N\text{-}CH_2\text{-}CH_2\text{-}$
661.	$OCHF_2$	$CH_3\text{-}O\text{-}CH_2\text{-}CH(CH_3)\text{-}$

	R^1	R^2
662.	$OCHF_2$	$CH_3-S-CH_2-CH(CH_3)-$
663.	$OCHF_2$	$CH_3-SO_2-CH_2-CH(CH_3)-$
664.	$OCHF_2$	$C_2H_5-O-CH_2-CH(CH_3)-$
665.	$OCHF_2$	$C_2H_5-S-CH_2-CH(CH_3)-$
666.	$OCHF_2$	$C_2H_5-SO_2-CH_2-CH(CH_3)-$
667.	$OCHF_2$	$(CH_3)_2N-CH_2-CH(CH_3)-$
668.	$OCHF_2$	$(C_2H_5)_2N-CH_2-CH(CH_3)-$
669.	$OCHF_2$	$[(CH_3)_2CH]_2N-CH_2-CH(CH_3)-$
670.	$OCHF_2$	$CH_3-O-CH(CH_3)-CH_2-$
671.	$OCHF_2$	$CH_3-S-CH(CH_3)-CH_2-$
672.	$OCHF_2$	$CH_3-SO_2-CH(CH_3)-CH_2-$
673.	$OCHF_2$	$C_2H_5-O-CH(CH_3)-CH_2-$
674.	$OCHF_2$	$C_2H_5-S-CH(CH_3)-CH_2-$
675.	$OCHF_2$	$C_2H_5-SO_2-CH(CH_3)-CH_2-$
676.	$OCHF_2$	$(CH_3)_2N-CH(CH_3)-CH_2-$
677.	$OCHF_2$	$(C_2H_5)_2N-CH(CH_3)-CH_2-$
678.	$OCHF_2$	$[(CH_3)_2CH]_2N-CH(CH_3)-CH_2-$
679.	$OCHF_2$	$CH_3-O-CH_2-CH_2-CH_2-$
680.	$OCHF_2$	$CH_3-S-CH_2-CH_2-CH_2-$
681.	$OCHF_2$	$CH_3-SO_2-CH_2-CH_2-CH_2-$
682.	$OCHF_2$	$C_2H_5-O-CH_2-CH_2-CH_2-$
683.	$OCHF_2$	$C_2H_5-S-CH_2-CH_2-CH_2-$
684.	$OCHF_2$	$C_2H_5-SO_2-CH_2-CH_2-CH_2-$
685.	$OCHF_2$	$(CH_3)_2N-CH_2-CH_2-CH_2-$
686.	$OCHF_2$	$(C_2H_5)_2N-CH_2-CH_2-CH_2-$
687.	$OCHF_2$	$CH_3-O-CH_2-C(CH_3)_2-$
688.	$OCHF_2$	$CH_3-S-CH_2-C(CH_3)_2-$
689.	$OCHF_2$	$CH_3-SO_2-CH_2-C(CH_3)_2-$
690.	$OCHF_2$	$C_2H_5-O-CH_2-C(CH_3)_2-$
691.	$OCHF_2$	$C_2H_5-S-CH_2-C(CH_3)_2-$
692.	$OCHF_2$	$C_2H_5-SO_2-CH_2-C(CH_3)_2-$
693.	$OCHF_2$	$(CH_3)_2N-CH_2-C(CH_3)_2-$
694.	$OCHF_2$	$(C_2H_5)_2N-CH_2-C(CH_3)_2-$
695.	$OCHF_2$	$[(CH_3)_2CH]_2N-CH_2-C(CH_3)_2-$
696.	$OCHF_2$	$Cl-CH_2-C{\equiv}C-CH_2-$
697.	$OCHF_2$	$CH_3-O-C(O)-CH_2$
698.	$OCHF_2$	$C_2H_5-O-C(O)-CH_2$
699.	$OCHF_2$	$CH_3-O-C(O)-CH(CH_3)-$
700.	$OCHF_2$	$C_2H_5-O-C(O)-CH(CH_3)-$
701.	$OCHF_2$	$(CH_3O)_2CH-CH_2-$

	R^1	R^2
702.	$OCHF_2$	$(C_2H_5O)_2CH-CH_2-$
703.	OCF_3	H
704.	OCF_3	CH_3
705.	OCF_3	CH_3CH_2-
706.	OCF_3	$(CH_3)_2CH-$
707.	OCF_3	$CH_3CH_2CH_2-$
708.	OCF_3	$n-C_4H_9$
709.	OCF_3	$(CH_3)_3C-$
710.	OCF_3	$(CH_3)_2CH-CH_2-$
711.	OCF_3	$n-C_5H_{11}$
712.	OCF_3	$(CH_3)_2CH-CH_2-CH_2-$
713.	OCF_3	$(C_2H_5)_2-CH-$
714.	OCF_3	$(CH_3)_3C-CH_2-$
715.	OCF_3	$(CH_3)_3C-CH_2-CH_2-$
716.	OCF_3	$C_2H_5CH(CH_3)-CH_2-$
717.	OCF_3	$CH_3-CH_2-C(CH_3)_2-$
718.	OCF_3	$(CH_3)_2CH-CH(CH_3)-$
719.	OCF_3	$(CH_3)_3C-CH(CH_3)-$
720.	OCF_3	$(CH_3)_2CH-CH_2-CH(CH_3)-$
721.	OCF_3	$CH_3-CH_2-C(CH_3)(C_2H_5)-$
722.	OCF_3	$CH_3-CH_2-CH_2-C(CH_3)_2-$
723.	OCF_3	$C_2H_5-CH_2-CH(CH_3)-CH_2-$
724.	OCF_3	cyclopropyl
725.	OCF_3	cyclopropyl-CH_2-
726.	OCF_3	cyclopropyl-$CH(CH_3)-$
727.	OCF_3	cyclobutyl
728.	OCF_3	cyclopentyl
729.	OCF_3	cyclohexyl
730.	OCF_3	$HC \equiv C-CH_2-$
731.	OCF_3	$HC \equiv C-CH(CH_3)-$
732.	OCF_3	$HC \equiv C-C(CH_3)_2-$
733.	OCF_3	$HC \equiv C-C(CH_3)(C_2H_5)-$
734.	OCF_3	$HC \equiv C-C(CH_3)(C_3H_7)-$
735.	OCF_3	$CH_2=CH-CH_2-$
736.	OCF_3	$H_2C=CH-CH(CH_3)-$
737.	OCF_3	$H_2C=CH-C(CH_3)_2-$
738.	OCF_3	$H_2C=CH-C(C_2H_5)(CH_3)-$
739.	OCF_3	$C_6H_5-CH_2-$
740.	OCF_3	$4-(CH_3)_3C-C_6H_4-CH_2-$
741.	OCF_3	$C_6H_5-CH_2-$

	R^1	R^2
742.	OCF$_3$	4-(CH$_3$)$_3$C-C$_6$H$_4$-CH$_2$-
743.	OCF$_3$	4-Cl-C$_6$H$_4$-CH$_2$-
744.	OCF$_3$	3-(CH$_3$O)-C$_6$H$_4$-CH$_2$-
745.	OCF$_3$	4-(CH$_3$O)-C$_6$H$_4$-CH$_2$-
746.	OCF$_3$	2-(CH$_3$O)-C$_6$H$_4$-CH$_2$-
747.	OCF$_3$	3-Cl-C$_6$H$_4$-CH$_2$-
748.	OCF$_3$	2-Cl-C$_6$H$_4$-CH$_2$-
749.	OCF$_3$	4-(F$_3$C)-C$_6$H$_4$-CH$_2$-
750.	OCF$_3$	NC-CH$_2$-
751.	OCF$_3$	NC-CH$_2$-CH$_2$-
752.	OCF$_3$	NC-CH$_2$-CH(CH$_3$)-
753.	OCF$_3$	NC-CH$_2$-C(CH$_3$)$_2$-
754.	OCF$_3$	NC-CH$_2$-CH$_2$-CH$_2$-
755.	OCF$_3$	FH$_2$C-CH$_2$-
756.	OCF$_3$	ClH$_2$C-CH$_2$-
757.	OCF$_3$	BrH$_2$C-CH$_2$-
758.	OCF$_3$	FH$_2$C-CH(CH$_3$)-
759.	OCF$_3$	ClH$_2$C-CH(CH$_3$)-
760.	OCF$_3$	BrH$_2$C-CH(CH$_3$)-
761.	OCF$_3$	F$_2$HC-CH$_2$-
762.	OCF$_3$	F$_3$C-CH$_2$-
763.	OCF$_3$	FH$_2$C-CH$_2$-CH$_2$-
764.	OCF$_3$	ClH$_2$C-CH$_2$-CH$_2$-
765.	OCF$_3$	BrH$_2$C-CH$_2$-CH$_2$-
766.	OCF$_3$	F$_2$HC-CH$_2$-CH$_2$-
767.	OCF$_3$	F$_3$C-CH$_2$-CH$_2$-
768.	OCF$_3$	CH$_3$-O-CH$_2$-CH$_2$-
769.	OCF$_3$	CH$_3$-S-CH$_2$-CH$_2$-
770.	OCF$_3$	CH$_3$-SO$_2$-CH$_2$-CH$_2$-
771.	OCF$_3$	C$_2$H$_5$-O-CH$_2$-CH$_2$-
772.	OCF$_3$	(CH$_3$)$_2$CH-O-CH$_2$-CH$_2$-
773.	OCF$_3$	C$_2$H$_5$-S-CH$_2$-CH$_2$-
774.	OCF$_3$	C$_2$H$_5$-SO$_2$-CH$_2$-CH$_2$-
775.	OCF$_3$	(CH$_3$)$_2$N-CH$_2$-CH$_2$-
776.	OCF$_3$	(C$_2$H$_5$)$_2$N-CH$_2$-CH$_2$-
777.	OCF$_3$	[(CH$_3$)$_2$CH]$_2$N-CH$_2$-CH$_2$-
778.	OCF$_3$	CH$_3$-O-CH$_2$-CH(CH$_3$)-
779.	OCF$_3$	CH$_3$-S-CH$_2$-CH(CH$_3$)-
780.	OCF$_3$	CH$_3$-SO$_2$-CH$_2$-CH(CH$_3$)-
781.	OCF$_3$	C$_2$H$_5$-O-CH$_2$-CH(CH$_3$)-

	R^1	R^2
782.	OCF_3	$C_2H_5\text{-}S\text{-}CH_2\text{-}CH(CH_3)\text{-}$
783.	OCF_3	$C_2H_5\text{-}SO_2\text{-}CH_2\text{-}CH(CH_3)\text{-}$
784.	OCF_3	$(CH_3)_2N\text{-}CH_2\text{-}CH(CH_3)\text{-}$
785.	OCF_3	$(C_2H_5)_2N\text{-}CH_2\text{-}CH(CH_3)\text{-}$
786.	OCF_3	$[(CH_3)_2CH]_2N\text{-}CH_2\text{-}CH(CH_3)\text{-}$
787.	OCF_3	$CH_3\text{-}O\text{-}CH(CH_3)\text{-}CH_2\text{-}$
788.	OCF_3	$CH_3\text{-}S\text{-}CH(CH_3)\text{-}CH_2\text{-}$
789.	OCF_3	$CH_3\text{-}SO_2\text{-}CH(CH_3)\text{-}CH_2\text{-}$
790.	OCF_3	$C_2H_5\text{-}O\text{-}CH(CH_3)\text{-}CH_2\text{-}$
791.	OCF_3	$C_2H_5\text{-}S\text{-}CH(CH_3)\text{-}CH_2\text{-}$
792.	OCF_3	$C_2H_5\text{-}SO_2\text{-}CH(CH_3)\text{-}CH_2\text{-}$
793.	OCF_3	$(CH_3)_2N\text{-}CH(CH_3)\text{-}CH_2\text{-}$
794.	OCF_3	$(C_2H_5)_2N\text{-}CH(CH_3)\text{-}CH_2\text{-}$
795.	OCF_3	$[(CH_3)_2CH]_2N\text{-}CH(CH_3)\text{-}CH_2\text{-}$
796.	OCF_3	$CH_3\text{-}O\text{-}CH_2\text{-}CH_2\text{-}CH_2\text{-}$
797.	OCF_3	$CH_3\text{-}S\text{-}CH_2\text{-}CH_2\text{-}CH_2\text{-}$
798.	OCF_3	$CH_3\text{-}SO_2\text{-}CH_2\text{-}CH_2\text{-}CH_2\text{-}$
799.	OCF_3	$C_2H_5\text{-}O\text{-}CH_2\text{-}CH_2\text{-}CH_2\text{-}$
800.	OCF_3	$C_2H_5\text{-}S\text{-}CH_2\text{-}CH_2\text{-}CH_2\text{-}$
801.	OCF_3	$C_2H_5\text{-}SO_2\text{-}CH_2\text{-}CH_2\text{-}CH_2\text{-}$
802.	OCF_3	$(CH_3)_2N\text{-}CH_2\text{-}CH_2\text{-}CH_2\text{-}$
803.	OCF_3	$(C_2H_5)_2N\text{-}CH_2\text{-}CH_2\text{-}CH_2\text{-}$
804.	OCF_3	$CH_3\text{-}O\text{-}CH_2\text{-}C(CH_3)_2\text{-}$
805.	OCF_3	$CH_3\text{-}S\text{-}CH_2\text{-}C(CH_3)_2\text{-}$
806.	OCF_3	$CH_3\text{-}SO_2\text{-}CH_2\text{-}C(CH_3)_2\text{-}$
807.	OCF_3	$C_2H_5\text{-}O\text{-}CH_2\text{-}C(CH_3)_2\text{-}$
808.	OCF_3	$C_2H_5\text{-}S\text{-}CH_2\text{-}C(CH_3)_2\text{-}$
809.	OCF_3	$C_2H_5\text{-}SO_2\text{-}CH_2\text{-}C(CH_3)_2\text{-}$
810.	OCF_3	$(CH_3)_2N\text{-}CH_2\text{-}C(CH_3)_2\text{-}$
811.	OCF_3	$(C_2H_5)_2N\text{-}CH_2\text{-}C(CH_3)_2\text{-}$
812.	OCF_3	$[(CH_3)_2CH]_2N\text{-}CH_2\text{-}C(CH_3)_2\text{-}$
813.	OCF_3	$Cl\text{-}CH_2\text{-}C{\equiv}C\text{-}CH_2\text{-}$
814.	OCF_3	$CH_3\text{-}O\text{-}C(O)\text{-}CH_2$
815.	OCF_3	$C_2H_5\text{-}O\text{-}C(O)\text{-}CH_2$
816.	OCF_3	$CH_3\text{-}O\text{-}C(O)\text{-}CH(CH_3)\text{-}$
817.	OCF_3	$C_2H_5\text{-}O\text{-}C(O)\text{-}CH(CH_3)\text{-}$
818.	OCF_3	$(CH_3O)_2CH\text{-}CH_2\text{-}$
819.	OCF_3	$(C_2H_5O)_2CH\text{-}CH_2\text{-}$
820.	$OCClF_2$	H
821.	$OCClF_2$	CH_3

	R^1	R^2
822.	$OCClF_2$	CH_3CH_2-
823.	$OCClF_2$	$(CH_3)_2CH-$
824.	$OCClF_2$	$CH_3CH_2CH_2-$
825.	$OCClF_2$	$n-C_4H_9$
826.	$OCClF_2$	$(CH_3)_3C-$
827.	$OCClF_2$	$(CH_3)_2CH-CH_2-$
828.	$OCClF_2$	$n-C_5H_{11}$
829.	$OCClF_2$	$(CH_3)_2CH-CH_2-CH_2-$
830.	$OCClF_2$	$(C_2H_5)_2-CH-$
831.	$OCClF_2$	$(CH_3)_3C-CH_2-$
832.	$OCClF_2$	$(CH_3)_3C-CH_2-CH_2-$
833.	$OCClF_2$	$C_2H_5CH(CH_3)-CH_2-$
834.	$OCClF_2$	$CH_3-CH_2-C(CH_3)_2-$
835.	$OCClF_2$	$(CH_3)_2CH-CH(CH_3)-$
836.	$OCClF_2$	$(CH_3)_3C-CH(CH_3)-$
837.	$OCClF_2$	$(CH_3)_2CH-CH_2-CH(CH_3)-$
838.	$OCClF_2$	$CH_3-CH_2-C(CH_3)(C_2H_5)-$
839.	$OCClF_2$	$CH_3-CH_2-CH_2-C(CH_3)_2-$
840.	$OCClF_2$	$C_2H_5-CH_2-CH(CH_3)-CH_2-$
841.	$OCClF_2$	cyclopropyl
842.	$OCClF_2$	cyclopropyl-CH_2-
843.	$OCClF_2$	cyclopropyl-$CH(CH_3)-$
844.	$OCClF_2$	cyclobutyl
845.	$OCClF_2$	cyclopentyl
846.	$OCClF_2$	cyclohexyl
847.	$OCClF_2$	$HC \equiv C-CH_2-$
848.	$OCClF_2$	$HC \equiv C-CH(CH_3)-$
849.	$OCClF_2$	$HC \equiv C-C(CH_3)_2-$
850.	$OCClF_2$	$HC \equiv C-C(CH_3)(C_2H_5)-$
851.	$OCClF_2$	$HC \equiv C-C(CH_3)(C_3H_7)-$
852.	$OCClF_2$	$CH_2=CH-CH_2-$
853.	$OCClF_2$	$H_2C=CH-CH(CH_3)-$
854.	$OCClF_2$	$H_2C=CH-C(CH_3)_2-$
855.	$OCClF_2$	$H_2C=CH-C(C_2H_5)(CH_3)-$
856.	$OCClF_2$	$C_6H_5-CH_2-$
857.	$OCClF_2$	$4-(CH_3)_3C-C_6H_4-CH_2-$
858.	$OCClF_2$	$C_6H_5-CH_2-$
859.	$OCClF_2$	$4-(CH_3)_3C-C_6H_4-CH_2-$
860.	$OCClF_2$	$4-Cl-C_6H_4-CH_2-$
861.	$OCClF_2$	$3-(CH_3O)-C_6H_4-CH_2-$

	R¹	R²
	R^1	R^2
862.	$OCClF_2$	$4\text{-}(CH_3O)\text{-}C_6H_4\text{-}CH_2\text{-}$
863.	$OCClF_2$	$2\text{-}(CH_3O)\text{-}C_6H_4\text{-}CH_2\text{-}$
864.	$OCClF_2$	$3\text{-}Cl\text{-}C_6H_4\text{-}CH_2\text{-}$
865.	$OCClF_2$	$2\text{-}Cl\text{-}C_6H_4\text{-}CH_2\text{-}$
866.	$OCClF_2$	$4\text{-}(F_3C)\text{-}C_6H_4\text{-}CH_2\text{-}$
867.	$OCClF_2$	$NC\text{-}CH_2\text{-}$
868.	$OCClF_2$	$NC\text{-}CH_2\text{-}CH_2\text{-}$
869.	$OCClF_2$	$NC\text{-}CH_2\text{-}CH(CH_3)\text{-}$
870.	$OCClF_2$	$NC\text{-}CH_2\text{-}C(CH_3)_2\text{-}$
871.	$OCClF_2$	$NC\text{-}CH_2\text{-}CH_2\text{-}CH_2\text{-}$
872.	$OCClF_2$	$FH_2C\text{-}CH_2\text{-}$
873.	$OCClF_2$	$ClH_2C\text{-}CH_2\text{-}$
874.	$OCClF_2$	$BrH_2C\text{-}CH_2\text{-}$
875.	$OCClF_2$	$FH_2C\text{-}CH(CH_3)\text{-}$
876.	$OCClF_2$	$ClH_2C\text{-}CH(CH_3)\text{-}$
877.	$OCClF_2$	$BrH_2C\text{-}CH(CH_3)\text{-}$
878.	$OCClF_2$	$F_2HC\text{-}CH_2\text{-}$
879.	$OCClF_2$	$F_3C\text{-}CH_2\text{-}$
880.	$OCClF_2$	$FH_2C\text{-}CH_2\text{-}CH_2\text{-}$
881.	$OCClF_2$	$ClH_2C\text{-}CH_2\text{-}CH_2\text{-}$
882.	$OCClF_2$	$BrH_2C\text{-}CH_2\text{-}CH_2\text{-}$
883.	$OCClF_2$	$F_2HC\text{-}CH_2\text{-}CH_2\text{-}$
884.	$OCClF_2$	$F_3C\text{-}CH_2\text{-}CH_2\text{-}$
885.	$OCClF_2$	$CH_3\text{-}O\text{-}CH_2\text{-}CH_2\text{-}$
886.	$OCClF_2$	$CH_3\text{-}S\text{-}CH_2\text{-}CH_2\text{-}$
887.	$OCClF_2$	$CH_3\text{-}SO_2\text{-}CH_2\text{-}CH_2\text{-}$
888.	$OCClF_2$	$C_2H_5\text{-}O\text{-}CH_2\text{-}CH_2\text{-}$
889.	$OCClF_2$	$(CH_3)_2CH\text{-}O\text{-}CH_2\text{-}CH_2\text{-}$
890.	$OCClF_2$	$C_2H_5\text{-}S\text{-}CH_2\text{-}CH_2\text{-}$
891.	$OCClF_2$	$C_2H_5\text{-}SO_2\text{-}CH_2\text{-}CH_2\text{-}$
892.	$OCClF_2$	$(CH_3)_2N\text{-}CH_2\text{-}CH_2\text{-}$
893.	$OCClF_2$	$(C_2H_5)_2N\text{-}CH_2\text{-}CH_2\text{-}$
894.	$OCClF_2$	$[(CH_3)_2CH]_2N\text{-}CH_2\text{-}CH_2\text{-}$
895.	$OCClF_2$	$CH_3\text{-}O\text{-}CH_2\text{-}CH(CH_3)\text{-}$
896.	$OCClF_2$	$CH_3\text{-}S\text{-}CH_2\text{-}CH(CH_3)\text{-}$
897.	$OCClF_2$	$CH_3\text{-}SO_2\text{-}CH_2\text{-}CH(CH_3)\text{-}$
898.	$OCClF_2$	$C_2H_5\text{-}O\text{-}CH_2\text{-}CH(CH_3)\text{-}$
899.	$OCClF_2$	$C_2H_5\text{-}S\text{-}CH_2\text{-}CH(CH_3)\text{-}$
900.	$OCClF_2$	$C_2H_5\text{-}SO_2\text{-}CH_2\text{-}CH(CH_3)\text{-}$
901.	$OCClF_2$	$(CH_3)_2N\text{-}CH_2\text{-}CH(CH_3)\text{-}$

	R^1	R^2
902.	OCClF$_2$	$(C_2H_5)_2N$-CH$_2$-CH(CH$_3$)-
903.	OCClF$_2$	[(CH$_3$)$_2$CH]$_2$N-CH$_2$-CH(CH$_3$)-
904.	OCClF$_2$	CH$_3$-O-CH(CH$_3$)-CH$_2$-
905.	OCClF$_2$	CH$_3$-S-CH(CH$_3$)-CH$_2$-
906.	OCClF$_2$	CH$_3$-SO$_2$-CH(CH$_3$)-CH$_2$-
907.	OCClF$_2$	C$_2$H$_5$-O-CH(CH$_3$)-CH$_2$-
908.	OCClF$_2$	C$_2$H$_5$-S-CH(CH$_3$)-CH$_2$-
909.	OCClF$_2$	C$_2$H$_5$-SO$_2$-CH(CH$_3$)-CH$_2$-
910.	OCClF$_2$	(CH$_3$)$_2$N-CH(CH$_3$)-CH$_2$-
911.	OCClF$_2$	$(C_2H_5)_2N$-CH(CH$_3$)-CH$_2$-
912.	OCClF$_2$	[(CH$_3$)$_2$CH]$_2$N-CH(CH$_3$)-CH$_2$-
913.	OCClF$_2$	CH$_3$-O-CH$_2$-CH$_2$-CH$_2$-
914.	OCClF$_2$	CH$_3$-S-CH$_2$-CH$_2$-CH$_2$-
915.	OCClF$_2$	CH$_3$-SO$_2$-CH$_2$-CH$_2$-CH$_2$-
916.	OCClF$_2$	C$_2$H$_5$-O-CH$_2$-CH$_2$-CH$_2$-
917.	OCClF$_2$	C$_2$H$_5$-S-CH$_2$-CH$_2$-CH$_2$-
918.	OCClF$_2$	C$_2$H$_5$-SO$_2$-CH$_2$-CH$_2$-CH$_2$-
919.	OCClF$_2$	(CH$_3$)$_2$N-CH$_2$-CH$_2$-CH$_2$-
920.	OCClF$_2$	$(C_2H_5)_2N$-CH$_2$-CH$_2$-CH$_2$-
921.	OCClF$_2$	CH$_3$-O-CH$_2$-C(CH$_3$)$_2$-
922.	OCClF$_2$	CH$_3$-S-CH$_2$-C(CH$_3$)$_2$-
923.	OCClF$_2$	CH$_3$-SO$_2$-CH$_2$-C(CH$_3$)$_2$-
924.	OCClF$_2$	C$_2$H$_5$-O-CH$_2$-C(CH$_3$)$_2$-
925.	OCClF$_2$	C$_2$H$_5$-S-CH$_2$-C(CH$_3$)$_2$-
926.	OCClF$_2$	C$_2$H$_5$-SO$_2$-CH$_2$-C(CH$_3$)$_2$-
927.	OCClF$_2$	(CH$_3$)$_2$N-CH$_2$-C(CH$_3$)$_2$-
928.	OCClF$_2$	$(C_2H_5)_2N$-CH$_2$-C(CH$_3$)$_2$-
929.	OCClF$_2$	[(CH$_3$)$_2$CH]$_2$N-CH$_2$-C(CH$_3$)$_2$-
930.	OCClF$_2$	Cl-CH$_2$-C≡C-CH$_2$-
931.	OCClF$_2$	CH$_3$-O-C(O)-CH$_2$
932.	OCClF$_2$	C$_2$H$_5$-O-C(O)-CH$_2$
933.	OCClF$_2$	CH$_3$-O-C(O)-CH(CH$_3$)-
934.	OCClF$_2$	C$_2$H$_5$-O-C(O)-CH(CH$_3$)-
935.	OCClF$_2$	(CH$_3$O)$_2$CH-CH$_2$-
936.	OCClF$_2$	(C$_2$H$_5$O)$_2$CH-CH$_2$-

The 2-cyanobenzenesulfonamide compounds of the formula I can be prepared, for example, by reacting a 2-cyanobenzenesulfonylhalide II with ammonia or a primary amine (III), similarly to a process described in J. March, 4th edition 1992, p. 499 (see

5   Scheme 1).

Scheme 1:

(II)   (I)
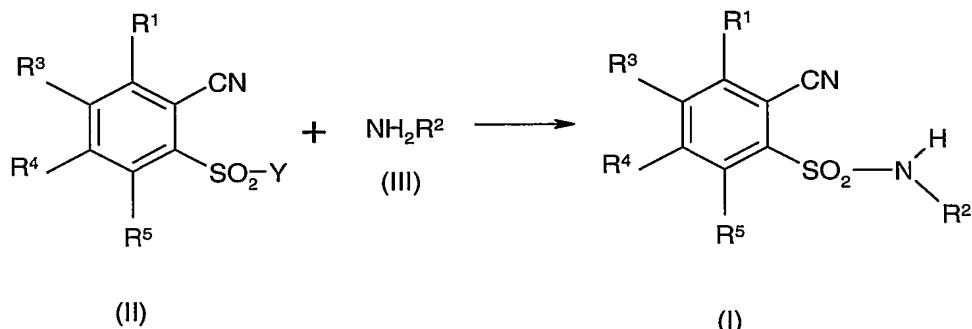
5   In Scheme 1 the variables R^1 to R^5 are as defined above and Y is halogen, especially
     chlorine or bromine. The reaction of a sulfonylhalide II, especially a sulfonylchloride,
     with an amine III is usually carried out in the presence of a solvent. Suitable solvents
     are polar solvents which are inert under the reaction conditions, for example C$_1$-C$_4$-
     alkanols such as methanol, ethanol, n-propanol or isopropanol, dialkyl ethers such as
10   diethyl ether, diisopropyl ether or methyl tert-butyl ether, cyclic ethers such as dioxane
     or tetrahydrofuran, acetonitrile, carboxamides such as N,N-dimethyl formamide, N,N-
     dimethyl acetamide or N-methylpyrrolidinone, water, (provided the sulfonylhalide II is
     sufficiently resistent to hydrolysis under the reaction conditions used) or a mixture
     thereof.
15
     In general, the amine III is employed in an at least equimolar amount, preferably at
     least 2-fold molar excess, based on the sulfonylhalide II, to bind the hydrogen halide
     formed. It may be advantageous to employ the primary amine III in an up to 6-fold mo-
     lar excess, based on the sulfonylhalide II.
20
     It may be advantageous to carry out the reaction in the presence of an auxiliary base.
     Suitable auxiliary bases include organic bases, for example tertiary amines, such as
     aliphatic tertiary amines, such as trimethylamine, triethylamine or diisopropylamine,
     cycloaliphatic tertiary amines such as N-methylpiperidine or aromatic amines such
25   pyridine, substituted pyridines such as 2,3,5-collidine, 2,4,6-collidine, 2,4-lutidine, 3,5-
     lutidine or 2,6-lutidine and inorganic bases for example alkali metal carbonates and
     alkaline earth metal carbonates such as lithium carbonate, potassium carbonate and
     sodium carbonate, calcium carbonate and alkaline metal hydrogencarbonates such as
     sodium hydrogen carbonate. The molar ratio of auxiliary base to sulfonylhalide II is
30   preferably in the range of from 1:1 to 4:1, preferably 1:1 to 2:1. If the reaction is carried
     out in the presence of an auxiliary base, the molar ratio of primary amine III to sulfonyl-
     halide II usually is 1:1 to 1.5:1.

     The reaction is usually carried out at a reaction temperature ranging from 0°C to the
35   boiling point of the solvent, preferably from 0 to 30°C.

If not commercially available, the sulfonylhalide compounds II may be prepared, for example by one of the processes as described below.

5   The preparation of the sulfonylchloride compound II can be carried out, for example, according to the reaction sequence shown in Scheme 2 where the variables R^1, R^3 to R^5 are as defined above:

Scheme 2:

(IV)   (V)   (II, Y = Cl)

10
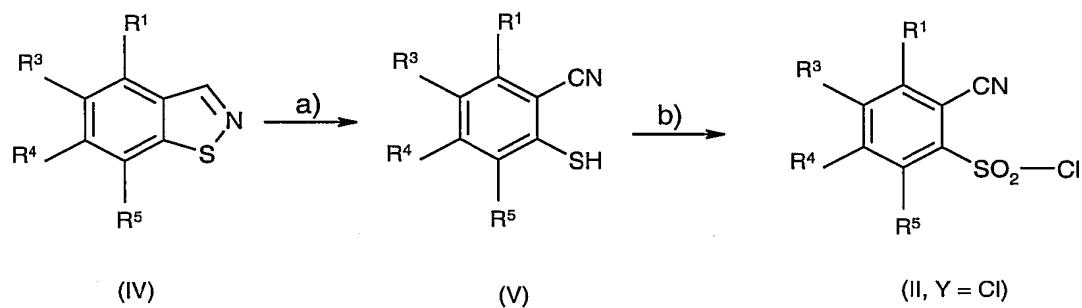
a)   conversion of a benzisothiazole IV to a thiol V, for example, in analogy to a proc-
     ess described in Liebigs Ann. Chem. 1980, 768-778, by reacting IV with a base
     such as an alkali metal hydroxide and alkaline earth metal hydroxide such as so-
15   dium hydroxide, potassium hydroxide and calcium hydroxide, an alkali metal hy-
     dride such as sodium hydride or potassium hydride or an alkoxide such as so-
     dium methoxide, sodium ethoxide and the like in an inert organic solvent, for ex-
     ample an ether such as diethyl ether, diisopropyl ether, tetrahydrofuran, dioxane,
     or in a alcohol such as methanol, ethanol, propanol, isopropanol, butanol, 1,2-
20   ethanediol, diethylene glycol, or in a carboxamide such as N,N-dimethyl forma-
     mide, N,N-dimethyl acetamide or N-methylpyrrolidinone or in dimethylsulfoxide or
     in a mixture of the above mentioned solvents; and acidification to yield the thiol V.
     The benzisothiazole IV can be prepared in analogy to a process described in
     Liebig Ann. Chem 729, 146-151 (1969); and subsequent

25

b)   oxidation of the thiol V to the sulfonylchloride II (Y = Cl), for example, by reacting
     the thiol V with chlorine in water or a water-solvent mixture, e.g. a mixture of wa-
     ter and acetic acid, in analogy to a process described in Jerry March, 3rd edition,
     1985, reaction 9-27, page 1087.

30
Compounds II (where Y is chlorine and R^4 and R^5 are hydrogen) may be prepared by
the reaction sequence shown in Scheme 3 where the variable R^1 has the meanings
given above and R^3 is H, Cl, Br, I or CN:

35 Scheme 3:

35
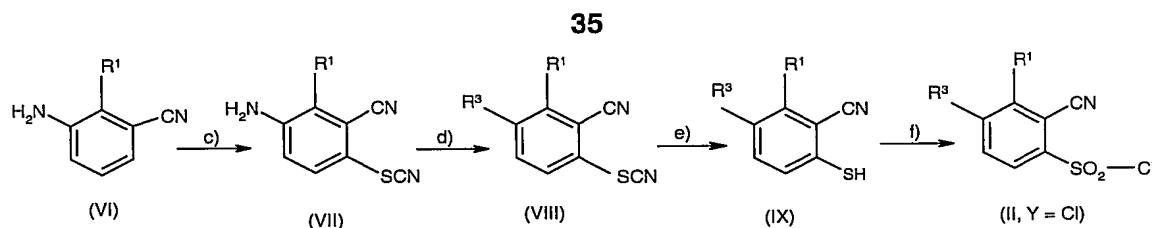
c) preparing a thiocyanato compound VII by thiocyanation of the aniline VI with thio-
     cyanogen, for example, in analogy to a process described in EP 945 449, in Jerry
5   March, 3rd edition, 1985, p. 476, in Neuere Methoden der organischen Chemie,
     Vol.1, 237 (1944) or in J.L. Wood, Organic Reactions, vol. III, 240 (1946); the
     thiocyanogen is usually prepared in situ by reacting, for example, sodium thiocy-
     anate with bromine in an inert solvent. Suitable solvents include alkanols such as
     methanol or ethanol or carboxylic acids such as acetic acid, propionic acid or
10 isobutyric acid and mixtures thereof. Preferably, the inert solvent is methanol to
     which some sodium bromide may have been added for stabilization.

d) conversion of the amino group in VII into a diazonium group by a conventional
     diazotation followed by conversion of the diazonium group into hydrogen, chlo-
15 rine, bromine or iodine or cyano. Suitable nitrosating agents are nitrosonium
     tetrafluoroborate, nitrosyl chloride, nitrosyl sulfuric acid, alkyl nitrites such as t-
     butyl nitrite, or salts of nitrous acid such as sodium nitrite. The conversion of the
     resulting diazonium salt into the corresponding compound VIII where R^3 = cyano,
     chlorine, bromine or iodine may be carried out by treatment of VII with a solution
20 or suspension of a copper(I) salt, such as copper(I) cyanide, chloride, bromide or
     iodide or with a solution of an alkali metal salt (cf., for example, Houben-Weyl,
     Methoden der organischen Chemie [Methods of Organic Chemistry], Georg
     Thieme Verlag Stuttgart, Vol. 5/4, 4th edition 1960, p. 438 ff.) The conversion of
     the resulting diazonium salt into the corresponding compound VIII where R^3 = H,
25 for example, may be carried out by treatment with hypophosphorous acid, phos-
     phorous acid, sodium stannite or in non-aqueous media by treatment with tribu-
     tyltin hydride or (C$_2$H$_5$)$_3$SnH or with sodium borohydride (cf., for example, Jerry
     March, 3rd edition, 1985, 646f).

30 e) reduction of the thiocyanate VIII to the corresponding thiol compound IX by
     treatment with zinc in the presence of sulfuric acid or by treatment with sodium
     sulfide; and subsequent

f) oxidation of the thiol IX to obtain the sulfonylchloride II in analogy to step b) of
35   scheme 2.

Furthermore, the benzenesulfonylchloride II (Y = Cl) may be prepared by the reaction
sequence shown in Scheme 4 where the variables R^1, R^3, R^4 and R^5 are as defined
above.

40
Scheme 4:

36

(X)   (XI)   (XII)

(XII)   (XIII)   (II, Y = Cl)
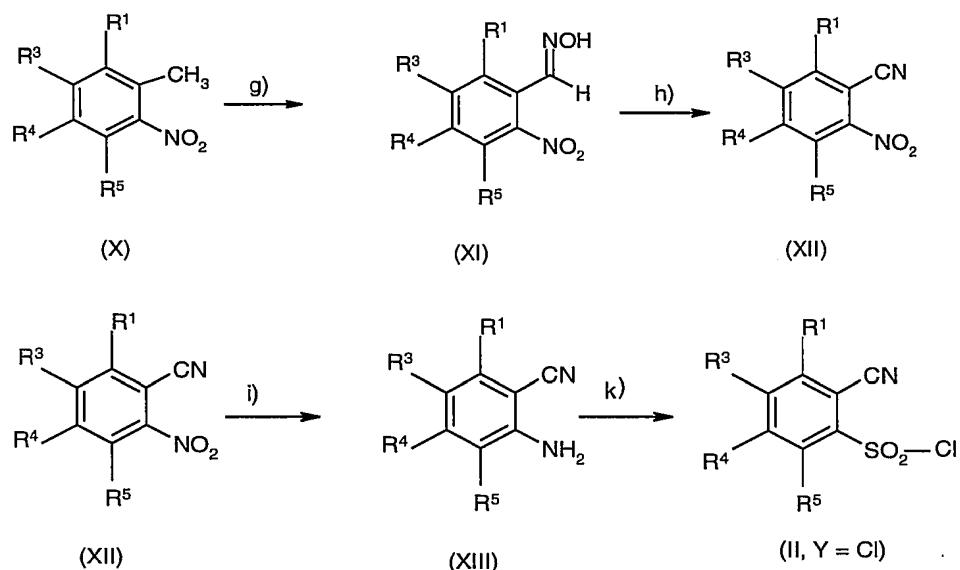
5   (g)   transformation of nitrotoluene X into the benzaldoxime compound XI, for example
           in analogy to a process described in WO 00/29394. The transformation of X into
           XI is e.g. achieved by reacting nitro compound X with an organic nitrite R-ONO,
           wherein R is alkyl in the presence of a base. Suitable nitrites are C_2-C_8-alkyl ni-
           trites such as n-butyl nitrite or (iso)amyl nitrite. Suitable bases are alkali metal
10   alkoxides such as sodium methoxide, potassium methoxide or potassium tert-
           butoxide, alkali metal hydroxides such as NaOH or KOH or organo magnesium
           compounds such as Grignard reagents of the formula R'MgX (R' = alkyl, X =
           halogen). The reaction is usually carried out in an inert solvent, which preferably
           comprises a polar aprotic solvent. Suitable polar aprotic solvents include carbox-
15   amides such as N,N-dialkylformamides, e.g. N,N-dimethylformamide, N,N-
           dialkylacetamides, e.g. N,N-dimethylacetamide or N-alkyllactames e.g. N-
           methylpyrrolidone or mixtures thereof or mixtures thereof with non-polar solvents
           such as alkanes, cycloalkanes and aromatic solvents e.g. toluene and xylenes.
           When using sodium bases, 1-10 mol % of an alcohol may be added, if appropri-
20   ate. The stoichiometric ratios are, for example, as follows: 1-4 equivalents of
           base, 1-2 equivalents of R-ONO; preferably 1.5-2.5 equivalents of base and 1-1.3
           equivalents of R-ONO; equally preferably: 1-2 equivalents of base and 1-1.3
           equivalents of R-ONO. The reaction is usually carried out in the range from -60°C
           to room temperature, preferably –50°C to –20°C, in particular from –35°C to
25   -25°C.

     (h)   dehydration of the aldoxime XI to the nitrile XII, for example by treatment with a
           dehydrating agent such as acetic anhydride, ethyl orthoformate and H⁺,
           $(C_6H_5)_3$P-CCl_4, trichloromethyl chloroformate, methyl (or ethyl) cyanoformate,
30   trifluoromethane sulfonic anhydride in analogy to a procedure described in Jerry
           March, 4th edition, 1992, 1038f;

     (i)   reduction of compound XII to the aniline XIII, for example by reacting the nitro
           compound XII with a metal, such as iron, zinc or tin or with $SnCl_2$, under acidic

conditions, with a complex hydride, such as lithium aluminium hydride and sodium. The reduction may be carried out without dilution or in a solvent or diluent. Suitable solvents are – depending on the reduction reagent chosen – for example water, alkanols, such as methanol, ethanol and isopropanol, or ethers, such as diethyl ether, methyl tert-butyl ether, dioxane, tetrahydrofuran and ethylene glycol dimethyl ether.

The nitro group in compound XII may also be converted into an amino group by catalytic hydrogenation (see, for example, Houben Weyl, Vol. IV/1c, p. 506 ff or WO 00/29394). Catalysts being suitable are, for example, platinum or palladium catalysts, wherein the metal may be supported on an inert carrier such as activated carbon, clays, celithe, silica, alumina, alkaline or earth alkaline carbonates etc. The metal content of the catalyst may vary from 1 to 20% by weight, based on the support. In general, from 0.001 to 1% by weight of platinum or palladium, based on the nitro compound XII, preferably from 0.01 to 1% by weight of platinum or palladium are used. The reaction is usually carried out either without a solvent or in an inert solvent or diluent. Suitable solvents or diluents include aromatics such as benzene, toluene, xylenes, carboxamides such as N,N-dialkylformamides, e.g. N,N-dimethylformamide, N,N-dialkylacetamides, e.g. N,N-dimethylacetamide or N-alkyl lactames e.g. N-methylpyrrolidone, tetraalkylureas, such as tetramethylurea, tetrabutylurea, N,N'-dimethylpropylene urea and N,N'-dimethylethylene urea, alkanols such as methanol, ethanol, isopropanol, or n-butanol, ethers, such as diethyl ether, methyl tert-butyl ether, dioxane, tetrahydrofuran and ethylene glycol dimethyl ether, carboxylic acids such as acetic acid or propionic acid, carbonic acid ester such as ethyl acetate. The reaction temperature is usually in the range from -20°C to 100 °C, preferably 0°C to 50°C. The hydrogenation may be carried out under atmospheric hydrogen pressure or elevated hydrogen pressure.

(k)   conversion of the amino group of compound XIII into the corresponding diazonium group followed by reacting the diazonium salt with sulfur dioxide in the presence of copper(II) chloride to afford the sulfonylchloride II. The diazonium salt may be prepared as described in step d) of scheme 3. Preferably, sodium nitrite is used as alkyl nitrite. In general, the sulfur dioxide is dissolved in glacial acetic acid.

The compounds of formula XIII may also be prepared according to methods described in WO 94/18980 using ortho-nitroanilines as precursors or WO 00/059868 using isatin precursors.

If individual compounds cannot be obtained via the above-described routes, they can be prepared by derivatization other compounds I or by customary modifications of the synthesis routes described.

The reaction mixtures are worked up in the customary manner, for example by mixing with water, separating the phases and, if appropriate, purifying the crude products by

chromatography, for example on alumina or silica gel may be employed. Some of the intermediates and end products may be obtained in the form of colorless or pale brown viscous oils which are freed or purified form volatile components under reduced pressure and at moderately elevated temperature. If the intermediates and end products

5   are obtained as solids, they may be purified by recrystallisation or digestion.

2-cyanobenzenesulfonamide compounds of the general formula I obtained as described above and suitable for methods for the protection of seeds from soil insects and of the resulting plant's roots and shoots from soil and foliar insects are character-

10 ized in the following tables PI, PII and PIII:

(I)
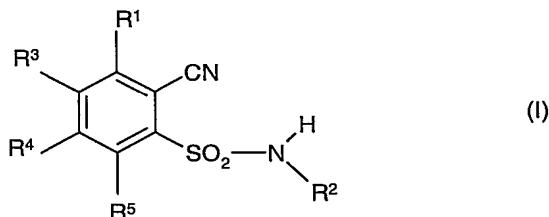
Table PI (m.p. melting point):

Example no.	R³	R⁵	R¹	R²	m.p. [°C]
1	I	H	CH_3	CH_3-	124-126
2	F	H	CH_3	CH_3-	Oil
3	F	H	CH_3	$(CH_3)_2CH$-	135-139
4	F	H	CH_3	$HC\equiv C-CH_2$-	98-100
5	F	H	CH_3	$C_6H_5-CH_2$-	103-108
6	F	H	CH_3	$CH_3-O-CH_2-CH_2$-	Oil
7	F	H	CH_3	$CH_3-S-CH_2-CH_2$-	62-66
8	F	H	CH_3	$CH_3CH_2CH_2$-	73-77
9	F	H	CH_3	$CH_2=CH-CH_2$-	78-82
10	F	H	CH_3	cyclopropyl	100-103
11	F	H	CH_3	cyclopropyl-CH_2-	82-88
12	H	H	OCF_3	CH_3-	69-73
13	F	H	CH_3	CH_3CH_2-	84-93
14	F	H	CH_3	$NC-CH_2-CH_2$-	129-134
15	H	H	$OCClF_2$	CH_3-	87-91
16	I	H	CH_3	$(CH_3)_2CH$-	100-104
17	I	H	CH_3	$HC\equiv C-CH_2$-	110-113
18	I	H	CH_3	CH_3CH_2-	115-117
19	I	H	CH_3	$C_6H_5-CH_2$-	133-137
20	I	H	CH_3	$CH_3-O-CH_2-CH_2$-	Oil
21	I	H	CH_3	$CH_3-S-CH_2-CH_2$-	131-135
22	I	H	CH_3	$CH_3CH_2CH_2$-	118-120
23	I	H	CH_3	$CH_2=CH-CH_2$-	106-109
24	I	H	CH_3	cyclopropyl	135-137

Example no.	R^3	R^5	R^1	R^2	m.p. [°C]
25	I	H	CH$_3$	cyclopropyl-CH$_2$-	111-114
26	I	H	CH$_3$	CH$_3$-S-CH$_2$-CH(CH$_3$)-	102-106
27	I	H	CH$_3$	NC-CH$_2$-CH$_2$-	182-188
28	F	H	CH$_3$	F$_3$C-CH$_2$-	142-162
29	H	H	OCF$_3$	CH$_3$CH$_2$-	67-71
30	H	H	OCF$_3$	(CH$_3$)$_2$CH-	Oil
31	H	H	OCF$_3$	HC≡C-CH$_2$-	80-83
32	H	H	OCF$_3$	C$_6$H$_5$-CH$_2$-	94-96
33	H	H	OCF$_3$	CH$_3$-O-CH$_2$-CH$_2$-	Oil
34	H	H	OCF$_3$	CH$_3$-S-CH$_2$-CH$_2$-	Oil
35	H	H	OCF$_3$	CH$_3$CH$_2$CH$_2$-	64-67
36	H	H	OCF$_3$	F$_3$C-CH$_2$-	118-122
37	H	H	OCF$_3$	CH$_2$=CH-CH$_2$-	Oil
38	H	H	OCF$_3$	cyclopropyl	86-88
39	H	H	OCClF$_2$	CH$_3$CH$_2$-	Oil
40	H	H	OCClF$_2$	(CH$_3$)$_2$CH-	Oil
41	H	H	OCClF$_2$	HC≡C-CH$_2$-	92-95
42	H	H	OCClF$_2$	C$_6$H$_5$-CH$_2$-	96-101
43	H	H	OCClF$_2$	CH$_3$-O-CH$_2$-CH$_2$-	Oil
44	H	H	OCClF$_2$	CH$_3$-S-CH$_2$-CH$_2$-	66-77
45	H	H	OCClF$_2$	CH$_3$CH$_2$CH$_2$-	Oil
46	H	H	OCClF$_2$	F$_3$C-CH$_2$-	119-130
47	H	H	OCClF$_2$	CH$_2$=CH-CH$_2$-	69-70
48	H	H	OCClF$_2$	cyclopropyl	98-100
49	H	H	OCClF$_2$	cyclopropyl-CH$_2$-	70-74
50	H	H	OCClF$_2$	CH$_3$-S-CH$_2$-CH(CH$_3$)-	86-87
51	H	H	OCClF$_2$	NC-CH$_2$-CH$_2$-	81-85
52	H	H	OCF$_3$	cyclopropyl-CH$_2$-	72-74
53	H	H	OCF$_3$	CH$_3$-S-CH$_2$-CH(CH$_3$)-	Oil
54	H	H	CH$_2$CH$_3$	CH$_3$CH$_2$-	Oil
55	H	H	OCF$_3$	NC-CH$_2$-CH$_2$-	106-111
56	H	H	CH$_2$CH$_3$	CH$_3$-	Oil
57	OCHF$_2$	H	CH$_3$	CH$_3$CH$_2$-	116-118
58	H	H	OCHF$_2$	F$_2$C=CF-CH$_2$CH$_2$-	Oil
59	CH$_3$	H	CH$_3$	CH$_3$CH$_2$-	104-109
60	H	H	CH$_2$CH$_3$	HC≡C-CH$_2$-	Oil
61	CH$_3$	H	OCH$_3$	CH$_3$CH$_2$-	Oil
62	H	H	OCF$_2$CClF	CH$_3$CH$_2$-	Oil
63	CH$_3$	H	OCH$_3$	HC≡C-CH$_2$-	102-109
64	H	H	OCF$_2$CClF	(CH$_3$)$_2$CH-	Oil
65	H	H	OCF$_2$CClF	HC≡C-CH$_2$-	Oil
66	NH$_2$	H	CH$_3$	CH$_3$CH$_2$-	200-206
67	H	H	OCF$_2$CClF	CH$_3$-O-CH$_2$-CH$_2$-	Oil
68	H	H	OCF$_2$CClF	CH$_3$CH$_2$CH$_2$-	Oil

Example no.	R^3	R^5	R^1	R^2	m.p. [°C]
69	F	H	OCH_3	CH_3-	Oil
70	F	H	OCH_3	$(CH_3)_2CH$-	Oil
71	F	H	OCH_3	$HC\equiv C-CH_2$-	Oil
72	F	H	OCH_3	CH_3CH_2-	Oil
73	H	H	OCF_2CClF	$C_6H_5-CH_2$-	Oil
74	H	H	OCF_2CClF	cyclopropyl	Oil
75	F	H	OCH_3	$CH_3-S-CH_2-CH_2$-	Oil
76	F	H	OCH_3	cyclopropyl	Oil
77	F	H	OCH_3	$C_6H_5-CH_2$-	Oil
78	F	H	OCH_3	cyclopropyl-CH_2-	Oil

In examples 1-78 of table PI, R^4 is hydrogen.

Table PII (m.p. melting point):

Example no.	R^3	R^5	R^1	R^2	m.p. [°C]/ *^{1}H-NMR/ **HPLC/MS
1	H	H	CH_3	$n-CH_2CH_2CH_3$	74-77
2	H	H	OCH_3	-CH_3	121-128
3	Cl	H	CH_3	-CH_2CH_3	85-90
4	CN	CH_3	CH_3	-CH_3	178-180
5	Br	H	CH_3	-CH_2CH_3	112-114
6	Br	H	CH_3	cyclopropyl	140-142
7	Br	H	CH_3	$n-C_4H_9$	112-116
8	Br	H	CH_3	-$CH(CH_3)_2$	102-103
9	Br	H	CH_3	$n-CH_2CH_2CH_3$	119-120
10	Br	H	CH_3	$C_6H_5-CH_2$-	139-140
11	Br	H	CH_3	$4-(CH_3)_3C-C_6H_4-CH_2$-	147-151
12	H	H	CH_3	$C_6H_5-CH_2$-	117-119
13	H	H	CH_3	$4-(CH_3)_3C-C_6H_4-CH_2$-	97-103
14	H	H	CH_3	$4-Cl-C_6H_4-CH_2$-	150-151
15	Br	H	CH_3	$3-(CH_3O)-C_6H_4-CH_2$-	123-125
16	H	H	CH_3	$3-(CH_3O)-C_6H_4-CH_2$-	117-122
17	Br	H	CH_3	$4-(CH_3O)-C_6H_4-CH_2$-	156-161
18	H	H	CH_3	$4-(CH_3O)-C_6H_4-CH_2$-	127-132
19	Br	H	CH_3	$2-(CH_3O)-C_6H_4-CH_2$-	103-108
20	H	H	CH_3	$2-(CH_3O)-C_6H_4-CH_2$-	127-130
21	Br	H	CH_3	$4-Cl-C_6H_4-CH_2$-	127-131
22	Br	H	CH_3	$3-Cl-C_6H_4-CH_2$-	102-108
23	H	H	CH_3	$3-Cl-C_6H_4-CH_2$-	118-125
24	Br	H	CH_3	$2-Cl-C_6H_4-CH_2$-	118-125
25	H	H	CH_3	$2-Cl-C_6H_4-CH_2$-	128-131
26	Br	H	CH_3	$4-(F_3C)-C_6H_4-CH_2$-	153-155
27	H	H	CH_3	$4-(F_3C)-C_6H_4-CH_2$-	135-137
28	Br	H	CH_3	cyclopropyl-CH_2-	106-110

Example no.	R^3	R^5	R^1	R^2	m.p. [°C]/ *^{1}H-NMR/ **HPLC/MS
29	H	H	CH_3	$-CH_3$	83-89
30	H	H	CH_3	$-CH_2CH_3$	98-103
31	H	H	CH_3	prop-2-ynyl	104-107
32	Br	H	CH_3	$-CH_2-CN$	106-110
33	H	H	CH_3	cyclopropyl-CH_2-	89-93
34	H	H	CH_3	$-CH_2-CN$	130-134
35	Br	H	CH_3	prop-2-ynyl	^{1}H-NMR
36	Br	H	CH_3	$(CH_3)_3C-CH_2-$	112-114
37	H	H	CH_3	$(CH_3)_3C-CH_2-$	86-93
38	H	H	CH_3	$CH_2=CHCH_2-$	^{1}H-NMR
39	H	H	OCH_3	$-CH_2CH_3$	121-126
40	H	H	OCH_3	$C_6H_5-CH_2-$	108-119
41	H	H	OCH_3	$-CH(CH_3)_2$	104-113
42	H	H	OCH_3	prop-2-ynyl	122-138
43	H	H	OCH_3	$-CH_2-CN$	^{1}H-NMR
44	H	H	OCH_3	$CH_2=CHCH_2-$	^{1}H-NMR
45	H	H	OCH_3	H	186-198
46	Cl	H	CH_3	$-CH_3$	112-122
47	Cl	H	CH_3	H	160-162
48	H	H	OCH_2CH_3	$-CH_3$	91-95
49	H	H	OCH_2CH_3	$-CH_2CH_3$	111-113
50	H	H	OCH_2CH_3	H	183-186
51	Cl	H	CH_3	$C_6H_5-CH_2-$	132-135
52	Cl	H	CH_3	$-CH(CH_3)_2$	86-94
53	Cl	H	CH_3	prop-2-ynyl	^{1}H-NMR
54	Cl	H	CH_3	$H_2C=CHCH_2-$	95-96
55	Cl	H	CH_3	FH_2CCH_2-	115-121
56	H	H	OCH_2CH_3	$C_6H_5-CH_2-$	oil
57	H	H	OCH_2CH_3	prop-2-ynyl	105-112
58	H	H	OCH_2CH_3	$-CH_2-CN$	129-134
59	H	H	OCH_2CH_3	$CH_2=CHCH_2-$	oil
60	H	H	OCH_2CH_3	$-CH_2-CH_2-CH_3$	113-115
61	H	H	OCH_2CH_3	cyclopropyl-CH_2	128-130
62	Cl	H	CH_3	$-CH_2-CN$	134-138
63	H	H	OCH_2CH_3	$-CH_2-CF_3$	oil
64	H	H	$OCH_2CH=CH_2$	$-CH_2-CH_3$	oil
65	H	H	$OCH(CH_3)_2$	$-CH_2-CH_3$	oil
66	H	H	$OCHF_2$	$-CH_2-CH_3$	98-100
67	H	H	$OCH(CH_3)_2$	H	132-136
68	H	H	$OCH(CH_3)_2$	prop-2-ynyl	oil
69	H	H	$OCH(CH_3)_2$	$-CH_2CN$	oil

Example no.	R^3	R^5	R^1	R^2	m.p. [°C]/ *^{1}H-NMR/ **HPLC/MS
70	H	H	$OCH(CH_3)_2$	cyclopropyl	oil
71	H	H	$OCH(CH_3)_2$	$-CH(CH_3)_2$	oil
72	H	H	$OCH(CH_3)_2$	$C_6H_5-CH_2-$	oil
73	H	H	$OCH(CH_3)_2$	$-CH_2-CH_3$	oil
74	Br	H	CH_3	H	149-151
75	H	H	CH_3	H	171-174
76	H	H	$OCH(CH_3)_2$	$O-CH_2-CH_3$	oil
77	H	H	$OCH(CH_3)_2$	$-CH_2-CH_2-CH_3$	oil
78	H	H	$OCHF_2$	H	135-137
79	H	H	$OCHF_2$	$-CH_2-C≡CH$	65-70
80	H	H	$OCH_2CHClCH_2Cl$	H	123-129
81	H	H	$OCH(CH_3)_2$	$-CH_3$	82-91
82	H	H	OCH_3	$-CH_2-c-C_3H_5$	92-95
83	H	H	OCH_3	$-c-C_3H_5$	142-148
84	H	H	OCH_3	$-O-CH_2-CH_3$	138-143
85	H	H	OCH_3	$-CH_2-CH_2-CN$	123-130
86	H	H	OCH_3	$-CH_2-CH_2-S-CH_3$	oil
87	H	H	OCH_3	$-CH_2-CH_2-S(O)_2-CH_3$	157-160
88	H	H	OCH_3	$-CH_2-CH_2F$	134-140
89	H	H	$OCHF_2$	CH_3	122-128
90	H	H	OCH_3	$-CH_2-CF_3$	136-141
91	H	H	OCH_3	$-CH_2-CHF_2$	116-118
92	H	H	OCH_3	$-O-CH_3$	136-139
93	Br	H	OCH_3	$-CH_2-C≡CH$	110-115
94	H	H	OCH_3	$-CH_2-CH_2-N(CH_3)_2$	94-97
95	Br	H	OCH_3	$-CH_2-C_6H_5$	134-136
96	H	H	$OCHF_2$	$-CH_2-CF_3$	120-138
97	H	H	$OCHF_2$	$-CH_2-C_6H_5$	115-117
98	H	H	$OCHF_2$	$-c-C_3H_5$	87-91
99	H	H	$OCHF_2$	$-CH_2-CH_2-S-CH_3$	^{1}H-NMR
100	Br	H	OCH_3	$-CH_3$	168-173
101	H	H	$OCHF_2$	$-CH_2-CH=CH_2$	75-78
102	H	H	$OCHF_2$	$-CH_2-c-C_3H_5$	^{1}H-NMR
103	H	H	$OCHF_2$	$-CH_2-CH_2-CH_3$	54-58
104	H	H	$OCHF_2$	$-CH_2-CH_2-O-CH_3$	^{1}H-NMR
105	H	H	$OCHF_2$	$-CH_2-CH_2-CN$	83-88
106	H	H	$OCHF_2$	$-CH-(CH_3)_2$	72-74
107	H	H	$OCHF_2$	$-CH_2-CHF_2$	92-96
108	H	H	$OCHF_2$	$-O-CH_3$	oil
109	H	H	CF_3	$-CH_2-CH_3$	81-86
110	H	H	CF_3	$-CH_2-C≡CH$	106-111
111	H	H	CF_3	$-CH_2-C_6H_5$	106-108

Example no.	R³	R⁵	R¹	R²	m.p. [°C]/ *¹H-NMR/ **HPLC/MS
112	H	H	CF₃	-CH₃	104-113
113	H	H	CF₃	-CH₂-CH=CH₂	71-73
114	H	H	CF₃	-CH-(CH₃)₂	65-67
115	H	H	CF₃	-CH₂-CH₂-CH₃	62-66
116	H	H	CF₃	-CH₂-c-C₃H₅	oil
117	H	H	CF₃	-CH₂-CF₃	oil
118	H	H	CF₃	-CH₂-CH₂-S-CH₃	oil
119	H	H	CF₃	-c-C₃H₅	94-96
120	H	H	CF₃	-O-CH₂-CH₃	118-120
121	H	H	CF₃	-CH₂-CH₂-SO₂-CH₃	169-171
122	H	H	CH₃	-O-CH₂-CH₃	118-121
123	H	H	CH₃	-O-CH₃	136-140
124	H	H	CH₃	-cyclobutyl	HPLC/MS
125	H	H	CH₃	-cyclopentyl	HPLC/MS
126	H	H	CH₃	-cyclohexyl	HPLC/MS
127	H	H	CH₃	-cyclopropyl	HPLC/MS
128	H	H	CH₃	-C(CH₃)₂-CH₂-CH₃	HPLC/MS
129	H	H	CH₃	-CH₂-CH₂-CH₂-N(C₂H₅)₂	HPLC/MS
130	H	H	CH₃	-CH(CH₃)-CH(CH₃)₂	HPLC/MS
131	H	H	CH₃	-CH(CH₃)-C(CH₃)₃	HPLC/MS
132	H	H	CH₃	-C(CH₃)₃	HPLC/MS
133	H	H	CH₃	-C(CH₃)(C₂H₅)-CH₂-CH₃	HPLC/MS
134	H	H	CH₃	-C(CH₃)₂-CH₂-CH₂-CH₃	HPLC/MS
135	H	H	CH₃	-CH₂-CH₂-N[CH(CH₃)₂]₂	HPLC/MS
136	H	H	CH₃	-CH₂-CH₂-O-C₂H₅	HPLC/MS
137	H	H	CH₃	-CH(C₂H₅)₂	HPLC/MS
138	H	H	CH₃	-CH(CH₃)-CH₂-CH(CH₃)₂	HPLC/MS
139	H	H	CH₃	-CH(C₂H₅)-CH₂-O-CH₃	HPLC/MS
140	H	H	CH₃	-C(CH₃)₂-C≡CH	HPLC/MS
141	H	H	CH₃	-CH(CH₃)-CH₂-O-C₂H₅	HPLC/MS
142	H	H	CH₃	-CH(CH₃)-CH₂-O-CH₃	HPLC/MS
143	H	H	CH₃	-CH₂-CH(CH₃)-C₂H₅	HPLC/MS
144	H	H	CH₃	-CH(CH₃)-CH₂-S-CH₃	HPLC/MS
145	H	H	CH₃	-CH₂-CH(OCH₃)₂	¹H-NMR
146	H	H	CH₃	-CH₂-CH₂-C(CH₃)₃	HPLC/MS
147	H	H	CH₃	-CH₂-CH(OC₂H₅)₂	HPLC/MS
148	H	H	CH₃	-CH₂-CH₂-S-CH₃	HPLC/MS
149	H	H	CH₃	-CH₂-CH(CH₃)₂	HPLC/MS
150	H	H	CH₃	-CH₂-CH₂-CH(CH₃)₂	HPLC/MS
151	H	H	CH₃	-CH₂-CH₂-CH₂-O-CH₃	HPLC/MS
152	H	H	CH₃	-CH₂-CH(CH₃)-O-CH₃	HPLC/MS
153	H	H	CH₃	-CH₂-CH(CH₃)-CH₂-C₂H₅	HPLC/MS

Example no.	R³	R⁵	R¹	R²	m.p. [°C]/ *¹H-NMR/ **HPLC/MS
154	H	H	CH₃	-CH₂-CH₂-CH₂-S-CH₃	HPLC/MS
155	H	H	CH₃	-C(CH₃)₂-CH₂-S-C₂H₅	HPLC/MS
156	H	H	CH₃	-C(CH₃)₂-CH₂-S-CH₃	HPLC/MS
157	H	H	CH₃	-CH(CH₃)-CH₂-N(CH₃)₂	HPLC/MS
158	H	H	CH₃	-C(CH₃)(n-C₃H₇)₂-C≡CH	HPLC/MS
159	H	H	CH₃	-C(CH₃)₂-CH=CH₂	HPLC/MS
160	H	H	CH₃	-CH(CH₃)-C(O)-O-CH₃	HPLC/MS
161	H	H	CH₃	-CH(CH₃)-c-C₃H₅	HPLC/MS
162	H	H	CH₃	-CH₂-CF₃	HPLC/MS
163	H	H	CH₃	-CH₂-CH₂-O-CH₃	HPLC/MS
164	H	H	CH₃	-CH(CH₃)-C₂H₅	HPLC/MS
165	H	H	CH₃	CH(CH₃)₂	HPLC/MS
166	H	H	CH₃	-C(CH₃)₂-CH₂-CN	HPLC/MS
167	H	H	CH₃	-CH₂-CH₂-CH₂-N(CH₃)₂	HPLC/MS
168	H	H	CH₃	-CH₂-CH₂-CH₂-CH₂-CH₃	HPLC/MS
169	H	H	CH₃	-CH₂-CH₂-F	HPLC/MS
170	H	H	CH₃	-CH₂-CH₂-CH₂-O-C₂H₅	HPLC/MS
171	H	H	CH₃	-CH₂-CH₂-O-CH(CH₃)₂	HPLC/MS
172	H	H	CH₃	-CH(CH₃)-CH₂-Cl	HPLC/MS
173	H	H	CH₃	-CH₂-CH₂-CH₂-Cl	HPLC/MS
174	H	H	CH₃	-CH₂-C≡C-CH₂-Cl	HPLC/MS
175	H	H	CH₃	-CH₂-C(O)-O-CH₃	HPLC/MS
176	H	H	CH₃	-CH₂-CH₂-CH₂-Br	HPLC/MS
177	H	H	CH₃	-CH₂-CH₂-CH₂-CH₃	HPLC/MS
178	H	H	CH₃	-CH₂-CH₂-S-C₂H₅	HPLC/MS
179	CN	H	CH₃	-CH₂-CH₃	114-119
180	CN	H	CH₃	-CH₃	172-175
181	CN	H	CH₃	-CH₂-C≡CH	95-105
182	CN	H	CH₃	H	oil
183	CN	H	CH₃	-CH₂-CH=CH₂	83-95
184	CN	H	CH₃	-CH₂-CH₂-CH₃	95-99
185	CN	H	CH₃	-CH₂-CH₂-F	oil
186	CN	H	CH₃	-cyclopropyl	oil
187	CN	H	CH₃	-O-CH₃	139-142
188	OCH₃	H	CH₃	-CH₂-CH₃	171-174
189	OCH₃	H	CH₃	-CH₂-C≡CH	151-155
190	OCH₃	H	CH₃	-H	171-180
191	OCH₃	H	CH₃	-CH₃	171-175

In examples 1-191 of table PII, R⁴ is hydrogen.

c-C₃H₅: cyclopropyl;

n-C₃H₇: n-propyl

*Some compounds of table PII were characterized by ^{1}H-NMR. The signals are characterized by chemical shift (ppm) vs. tetramethylsilane, by their multiplicity and by their integral (relativ number of hydrogen atoms given). The following abbreviations are used to characterize the multiplicity of the signals: m = multiplett, t = triplett, d = doublett and s = singulett.

Example 35: 2.06 (t, 1H), 2.72 (s, 3H), 3.92 (m, 2H), 5,56 (t, 1H), 7.85 (d, 1H), 7.92 (d, 1H), CDCl$_3$

Example 38: 2.66 (s, 3H), 3.67 (m, 2H), 5.12 (d, 1H), 5.21 (d, 1H), 5.30 (t, 1H), 5.74 (m, 1H), 7.56 (d, 1H), 7.62 (t, 1H), 7.95 (d, 1H), CDCl$_3$

Example 43: 4.04 (s, 3H), 4.13 (d, 2H), 6.15 (t, 1H), 7.30 (m, 1H), 7.72 (m, 2H), CDCl$_3$

Example 44: 3.67 (m, 2H), 4.04 (s, 3H),5.11 (d, 1H), 5.23 (m, 2H), 5.76 (m, 1H), 7.23 (dd, 1H), 7.68 (m, 2H), CDCl$_3$

Example 53: 2.07 (m, 1H), 2.72 (s, 3H), 3.95 (m, 2H), 5.52 (t, 1H), 7.72 (d, 1H), 7.95 (d, 1H), CDCl$_3$

Example 99: 2.05 (s, 3H), 2.66 (t, 2H), 3.28 (q, 2H), 5.62 (t, 1H), 6.73 (t, 1H), 7.59 (d, 1H), 7.77 (t, 1H), 7.99 (d, 1H), CDCl$_3$

Example 102: 0.13 (m, 2H), 0.31 (m, 2H), 0.90 (m, 1H), 2.95 (t, 2H), 5.32 (t, 1H), 6.72 (t, 1H), 7.57 (d, 1H), 7.77 (t, 1H), 8.00 (d, 1H), CDCl$_3$

Example 104: 3.27 (s, 3H), 3.33 (m, 2H), 3.43 (m, 2H), 5.56 (t, 1H), 6.75 (t, 1H), 7.58 (d, 1H), 7.77 (t, 1H), 8.00 (d, 1H), CDCl$_3$

Example 145: 2.65 (s, 3H), 3.15 (pt, 2H), 3.3 (s, 6H), 4.35 (t, 1H), 5.65 (t, 1H) 7.55 (d, 1H), 7.6 (t, 1H), 7.9 (d, 1H), CDCl$_3$

**Some compounds of table PII were characterized by coupled High Performance Liquid Chromatography / mass spectrometry (HPLC/MS).
HPLC column: RP-18 column (Chromolith Speed ROD from Merck KgaA, Germany).
Elution: acetonitrile + 0.1% trifluoroacetic acid (TFA) / water in a ratio from 5:95 to 95:5 in 5 minutes at 40 °C.
MS: Quadrupol electrospray ionisation, 80 V (positiv modus)

Example 124: 2.813 min, m/z = 273 [M+Na]$^+$
Example 125: 3.043 min, m/z = 287 [M+Na]$^+$
Example 126: 3.260 min, m/z = 279 [M+H]$^+$
Example 127: 2.486 min, m/z = 237 [M+H]$^+$
Example 128: 3.198 min, m/z = 267 [M+H]$^+$
Example 129: 1.955 min, m/z = 310 [M+H]$^+$
Example 130: 3.244 min, m/z = 267 [M+H]$^+$
Example 131: 3.438 min, m/z = 281 [M+H]$^+$
Example 132: 3.004 min, m/z = 253 [M+H]$^+$
Example 133: 3.483 min, m/z = 303 [M+H]$^+$
Example 134: 3.533 min, m/z = 281 [M+H]$^+$
Example 135: 2.091 min, m/z = 324 [M+H]$^+$
Example 136: 2.534 min, m/z = 269 [M+H]$^+$

Example 137: 3.154 min, m/z = 267 [M+H]$^+$
Example 138: 3.413 min, m/z = 303 [M+H]$^+$
Example 139: 2.761 min, m/z = 283 [M+H]$^+$
Example 140: 2.740 min, m/z = 263 [M+H]$^+$
5   Example 141: 2.802 min, m/z = 283 [M+H]$^+$
Example 142: 2.596 min, m/z = 269 [M+H]$^+$
Example 143: 3.225 min, m/z = 267 [M+H]$^+$
Example 144: 3.836 min, m/z = 285 [M+H]$^+$
Example 146: 3.430 min, m/z = 281 [M+H]$^+$
10   Example 147: 2.934 min, m/z = 335 [M+Na]$^+$
Example 148: 2.677 min, m/z = 271 [M+H]$^+$
Example 149: 2.989 min, m/z = 253 [M+H]$^+$
Example 150: 3.254 min, m/z = 267 [M+H]$^+$
Example 151: 2.443 min, m/z = 269 [M+H]$^+$
15   Example 152: 2.481 min, m/z = 269 [M+H]$^+$
Example 153: 3.501 min, m/z = 281 [M+H]$^+$
Example 154: 2.750 min, m/z = 285 [M+H]$^+$
Example 155: 3.362 min, m/z = 335 [M+Na]$^+$
Example 156: 3.116 min, m/z = 321 [M+Na]$^+$
20   Example 157: 1.740 min, m/z = 282 [M+H]$^+$
Example 158: 3.249 min, m/z = 291 [M+H]$^+$
Example 159: 2.985 min, m/z = 265 [M+H]$^+$
Example 160: 2.364 min, m/z = 283 [M+H]$^+$
Example 161: 2.919 min, m/z = 265 [M+H]$^+$
25   Example 162: 2.644 min, m/z = 301 [M+Na]$^+$
Example 163: 2.177 min, m/z = 255 [M+H]$^+$
Example 164: 2.917 min, m/z = 253 [M+H]$^+$
Example 165: 2.570 min, m/z = 239 [M+H]$^+$
Example 166: 2.500 min, m/z = 278 [M+H]$^+$
30   Example 167: 3.314 min, m/z = 282 [M+H]$^+$
Example 168: 3.297 min, m/z = 267 [M+H]$^+$
Example 169: 2.259 min, m/z = 243 [M+H]$^+$
Example 170: 2.709 min, m/z = 283 [M+H]$^+$
Example 171: 2.814 min, m/z = 283 [M+H]$^+$
35   Example 172: 2.733 min, m/z = 273 [M+H]$^+$
Example 173: 2.729 min, m/z = 273 [M+H]$^+$
Example 174: 2.743 min, m/z = 283 [M+H]$^+$
Example 175: 2.187 min, m/z = 269 [M+H]$^+$
Example 176: 2.935 min, m/z = 317 [M+H]$^+$
40   Example 177: 3.090 min, m/z = 253 [M+H]$^+$
Example 178: 2.956 min, m/z = 285 [M+H]$^+$

Table PIII:

Example no.	R^3	R^4	R^1	R^2	m.p. [°C]
1.	H	Cl	CH$_3$	CH$_2$CH$_3$	119-123
2.	H	Br	CH$_3$	CH$_2$CH$_3$	141-144

In examples 1,2 of table PIII, R^5 is hydrogen.

The term seed embraces seeds and plant propagules of all kinds including but not lim-
ited to true seeds, seed pieces, suckers, corms, bulbs, fruit, tubers, grains, cuttings, cut
shoots and the like and means in a preferred embodiment true seeds.

The compounds of formula I are used for the protection of the seed from soil pests and
the resulting plant's roots and shoots against soil pests and foliar insects. The protec-
tion of the resulting plant's roots and shoots is preferred. More preferred is the protec-
tion of resulting plant's shoots from piercing and sucking insects, wherein the protection
from aphids is most preferred.

The present invention therefore comprises a method for the protection of seeds from
soil insects and of the seedlings' roots and shoots from soil and foliar insects compris-
ing contacting the seeds before sowing and/or after pregermination with a compound of
the general formula I, preferably to a method, wherein the plant's roots and shoots are
protected, more preferably to a method, wherein the plants shoots are protected form
piercing and sucking insects, most preferably to a method, wherein the plants shoots
are protected from aphids.

The term soil insects and foliar insects encompasses the following genera and species:

millipedes (Diplopoda), hemiptera (homoptera and heteroptera), Orthoptera,

lepidopterans (Lepidoptera), for example *Agrotis ipsilon, Agrotis segetum, Chilo ssp.,
Euxoa ssp., Momphidae, Ostrinia nubilalis, and Phthorimaea operculella,*
beetles (Coleoptera), for example *Agriotes lineatus, Agriotes obscurus, Aphthona eu-
phoridae, Athous haemorrhoidalis, Atomaria linearis, Cetonia aurata, Ceuthorrhynchus
assimilis, Ceuthorrhynchus napi, Chaetocnema tibialis, Ctenicera ssp., Diabrotica
longicornis, Diabrotica speciosa, Diabrotica semi-punctata, Diabrotica virgifera, Limo-
nius californicus, Melanotus communis, Otiorrhynchus ovatus, Phyllobius pyri, Phyllo-
phaga sp., Phyllophaga cuyabana, Phyllophaga triticophaga, Phyllopertha horticola,
Phyllotreta nemorum, Phyllotreta striolata, Popillia japonica, Sitona lineatus* and *Sito-
philus granaria,*

flies (Diptera), for example *Chrysomya bezziana, Chrysomya hominivorax, Chrysomya
macellaria, Contarinia sorghicola, Cordylobia anthropophaga, Dacus cucurbitae, Dacus
oleae, Dasineura brassicae, Delia antique, Delia coarctata, Delia platura, Delia radi-
cum, Fannia canicularis, Gasterophilus intestinalis, Geomyza Tripunctata, Glossina
morsitans, Haematobia irritans, Haplodiplosis equestris, Hypoderma lineata, Lucilia
caprina, Lucilia cuprina, Lucilia sericata, Lycoria pectoralis, Mayetiola destructor, Mus-
cina stabulans, Oestrus ovis, Opomyza florum, Oscinella frit, Pegomya hysocyami,*

Phorbia antiqua, Phorbia brassicae, Phorbia coarctata, Psila rosae, Rhagoletis cerasi, Rhagoletis pomonella, Tabanus bovinus, Tipula oleracea and *Tipula paludosa,*

thrips (Thysanoptera), e.g. Thrips simplex,

ants (Hymenoptera), e.g. *Atta capiguara, Atta cephalotes, Atta laevigata, Atta robusta, Atta sexdens, Atta texana, Monomorium pharaonis, Solenopsis geminata* and *Solenopsis invicta, Pogonomyrmex ssp.* and *Pheidole megacephala,*

termites (Isoptera), *e.g. Coptotermes ssp,*

springtails (Collembola), *e.g. Onychiurus ssp.*

insects from the order of the lepidopterans (*Lepidoptera*), for example *Agrotis ypsilon, Agrotis segetum, Alabama argillacea, Anticarsia gemmatalis, Argyresthia conjugella, Autographa gamma, Bupalus piniarius, Cacoecia murinana, Capua reticulana, Cheimatobia brumata, Choristoneura fumiferana, Choristoneura occidentalis, Cirphis unipuncta, Cydia pomonella, Dendrolimus pini, Diaphania nitidalis, Diatraea grandiosella, Earias insulana, Elasmopalpus lignosellus, Eupoecilia ambiguella, Evetria bouliana, Feltia subterranea, Galleria mellonella, Grapholitha funebrana, Grapholitha molesta, Heliothis armigera, Heliothis virescens, Heliothis zea, Hellula undalis, Hibernia defoliaria, Hyphantria cunea, Hyponomeuta malinellus, Keiferia lycopersicella, Lambdina fiscellaria, Laphygma exigua, Leucoptera coffeella, Leucoptera scitella, Lithocolletis blancardella, Lobesia botrana, Loxostege sticticalis, Lymantria dispar, Lymantria monacha, Lyonetia clerkella, Malacosoma neustria, Mamestra brassicae, Orgyia pseudotsugata, Ostrinia nubilalis, Panolis flammea, Pectinophora gossypiella, Peridroma saucia, Phalera bucephala, Phthorimaea operculella, Phyllocnistis citrella, Pieris brassicae, Plathypena scabra, Plutella xylostella, Pseudoplusia includens, Rhyacionia frustrana, Scrobipalpula absoluta, Sitotroga cerealella, Sparganothis pilleriana, Spodoptera frugiperda, Spodoptera littoralis, Spodoptera litura, Thaumatopoea pityocampa, Tortrix viridana, Trichoplusia ni* and *Zeiraphera canadensis,*

beetles (*Coleoptera*), for example *Agrilus sinuatus, Agriotes lineatus, Agriotes obscurus, Amphimallus solstitialis, Anisandrus dispar, Anthonomus grandis, Anthonomus pomorum, Atomaria linearis, Blastophagus piniperda, Blitophaga undata, Bruchus rufimanus, Bruchus pisorum, Bruchus lentis, Byctiscus betulae, Cassida nebulosa, Cerotoma trifurcata, Ceuthorrhynchus assimilis, Ceuthorrhynchus napi, Chaetocnema tibialis, Conoderus vespertinus, Crioceris asparagi, Diabrotica longicornis, Diabrotica 12-punctata, Diabrotica virgifera, Epilachna varivestis, Epitrix hirtipennis, Eutinobothrus brasiliensis, Hylobius abietis, Hypera brunneipennis, Hypera postica, Ips typographus, Lema bilineata, Lema melanopus, Leptinotarsa decemlineata, Limonius californicus, Lissorhoptrus oryzophilus, Melanotus communis, Meligethes aeneus, Melolontha hip-*

pocastani, *Melolontha melolontha, Oulema oryzae, Ortiorrhynchus sulcatus, Otiorrhynchus ovatus, Phaedon cochleariae, Phyllotreta chrysocephala, Phyllophaga sp., Phyllopertha horticola, Phyllotreta nemorum, Phyllotreta striolata, Popillia japonica, Sitona lineatus* and *Sitophilus granaria,*

dipterans (*Diptera*), for example *Aedes aegypti, Aedes vexans, Anastrepha ludens, Anopheles maculipennis, Ceratitis capitata, Chrysomya bezziana, Chrysomya hominivorax, Chrysomya macellaria, Contarinia sorghicola, Cordylobia anthropophaga, Culex pipiens, Dacus cucurbitae, Dacus oleae, Dasineura brassicae, Fannia canicularis, Gasterophilus intestinalis, Glossina morsitans, Haematobia irritans, Haplodiplosis equestris, Hylemyia platura, Hypoderma lineata, Liriomyza sativae, Liriomyza trifolii, Lucilia caprina, Lucilia cuprina, Lucilia sericata, Lycoria pectoralis, Mayetiola destructor, Musca domestica, Muscina stabulans, Oestrus ovis, Oscinella frit, Pegomya hysocyami, Phorbia antiqua, Phorbia brassicae, Phorbia coarctata, Rhagoletis cerasi, Rhagoletis pomonella, Tabanus bovinus, Tipula oleracea* and *Tipula paludosa,*

thrips (*Thysanoptera*), e.g. *Frankliniella fusca, Frankliniella occidentalis, Frankliniella tritici, Scirtothrips citri, Thrips oryzae, Thrips palmi* and *Thrips tabaci,*

hymenopterans (*Hymenoptera*), e.g. *Athalia rosae, Atta cephalotes, Atta sexdens, Atta texana, Hoplocampa minuta, Hoplocampa testudinea, Monomorium pharaonis, Solenopsis geminata* and *Solenopsis invicta,*

heteropterans (*Heteroptera*), e.g. *Acrosternum hilare, Blissus leucopterus, Cyrtopeltis notatus, Dysdercus cingulatus, Dysdercus intermedius, Eurygaster integriceps, Euschistus impictiventris, Leptoglossus phyllopus, Lygus lineolaris, Lygus pratensis, Nezara viridula, Piesma quadrata, Solubea insularis* and *Thyanta perditor,*

aphids, such as homopterans (*Homoptera*), e.g. *Acyrthosiphon onobrychis, Adelges laricis, Aphidula nasturtii, Aphis fabae, Aphis forbesi, Aphis pomi, Aphis gossypii, Aphis grossulariae, Aphis schneideri, Aphis spiraecola, Aphis sambuci, Acyrthosiphon pisum, Aulacorthum solani, Brachycaudus cardui, Brachycaudus helichrysi, Brachycaudus persicae, Brachycaudus prunicola, Brevicoryne brassicae, Capitophorus horni, Cerosipha gossypii, Chaetosiphon fragaefolii, Cryptomyzus ribis, Dreyfusia nordmannianae, Dreyfusia piceae, Dysaphis radicola, Dysaulacorthum pseudosolani, Dysaphis plantaginea, Dysaphis pyri, Empoasca fabae, Hyalopterus pruni, Hyperomyzus lactucae, Macrosiphum avenae, Macrosiphum euphorbiae, Macrosiphon rosae, Megoura viciae, Melanaphis pyrarius, Metopolophium dirhodum, Myzodes persicae, Myzus ascalonicus, Myzus cerasi, Myzus varians, Nasonovia ribis-nigri, Nilaparvata lugens, Pemphigus bursarius, Perkinsiella saccharicida, Phorodon humuli, Psylla mali, Psylla piri, Rhopalomyzus ascalonicus, Rhopalosiphum maidis, Rhopalosiphum padi, Rhopalosiphum insertum, Sappaphis mala, Sappaphis mali, Schizaphis graminum, Schizoneura lanu-*

ginosa, *Sitobion avenae, Trialeurodes vaporariorum, Toxoptera aurantiiand*, and *Viteus vitifolii;*

termites (*Isoptera*), e.g. *Calotermes flavicollis, Leucotermes flavipes, Reticulitermes*
5   *lucifugus* und *Termes natalensis;*

orthopterans (*Orthoptera*), e.g. *Acheta domestica, Blatta orientalis, Blattella germanica, Forficula auricularia, Gryllotalpa gryllotalpa, Locusta migratoria, Melanoplus bivittatus, Melanoplus femur-rubrum, Melanoplus mexicanus, Melanoplus sanguinipes, Melano-*
10   *plus spretus, Nomadacris septemfasciata, Periplaneta americana, Schistocerca americana, Schistocerca peregrina, Stauronotus maroccanus* and *Tachycines asynamorus* ;

Arachnoidea, such as arachnids (*Acarina*), e.g. of the families *Argasidae, Ixodidae* and *Sarcoptidae*, such as *Amblyomma americanum, Amblyomma variegatum, Argas persi-*
15   *cus, Boophilus annulatus, Boophilus decoloratus, Boophilus microplus, Dermacentor silvarum, Hyalomma truncatum, Ixodes ricinus, Ixodes rubicundus, Ornithodorus moubata, Otobius megnini, Dermanyssus gallinae, Psoroptes ovis, Rhipicephalus appendiculatus, Rhipicephalus evertsi, Sarcoptes scabiei,* and Eriophyidae spp. such as *Aculus schlechtendali, Phyllocoptrata oleivora* and *Eriophyes sheldoni;* Tarsonemidae spp.
20   such as *Phytonemus pallidus* and *Polyphagotarsonemus latus;* Tenuipalpidae spp. such as *Brevipalpus phoenicis;* Tetranychidae spp. such as *Tetranychus cinnabarinus, Tetranychus kanzawai, Tetranychus pacificus, Tetranychus telarius* and *Tetranychus urticae, Panonychus ulmi, Panonychus citri,* and *oligonychus pratensis;*

25   Nematodes, especially plant parasitic nematodes such as root knot nematodes, *Meloidogyne hapla, Meloidogyne incognita, Meloidogyne javanica,* and other Meloidogyne species; cyst-forming nematodes, *Globodera rostochiensis* and other Globodera species; *Heterodera avenae, Heterodera glycines, Heterodera schachtii, Heterodera trifolii,* and other Heterodera species; Seed gall nematodes, Anguina species; Stem and foliar
30   nematodes, Aphelenchoides species; Sting nematodes, *Belonolaimus longicaudatus* and other Belonolaimus species; Pine nematodes, *Bursaphelenchus xylophilus* and other Bursaphelenchus species; Ring nematodes, Criconema species, Criconemella species, Criconemoides species, Mesocriconema species; Stem and bulb nematodes, *Ditylenchus destructor, Ditylenchus dipsaci* and other Ditylenchus species; Awl nema-
35   todes, Dolichodorus species; Spiral nematodes, *Heliocotylenchus multicinctus* and other Helicotylenchus species; Sheath and sheathoid nematodes, Hemicycliophora species and Hemicriconemoides species; Hirshmanniella species; Lance nematodes, Hoploaimus species; false rootknot nematodes, Nacobbus species; Needle nematodes, *Longidorus elongatus* and other Longidorus species; Lesion nematodes, *Pratylen-*
40   *chus neglectus, Pratylenchus penetrans, Pratylenchus curvitatus, Pratylenchus goodeyi* and other Pratylenchus species; Burrowing nematodes, *Radopholus similis* and other Radopholus species; Reniform nematodes, *Rotylenchus robustus* and other Ro-

tylenchus species; Scutellonema species; Stubby root nematodes, *Trichodorus primiti-vus* and other Trichodorus species, Paratrichodorus species; Stunt nematodes, *Tylenchorhynchus claytoni*, Tylenchorhynchus dubius and other Tylenchorhynchus species; Citrus nematodes, Tylenchulus species; Dagger nematodes, Xiphinema species; and

5   other plant parasitic nematode species.

Piercing and sucking insects comprise the following genera and species :

thrips (*Thysanoptera*), e.g. *Frankliniella fusca, Frankliniella occidentalis, Frankliniella*

10 *tritici, Scirtothrips citri, Thrips oryzae, Thrips palmi* and *Thrips tabaci,*

hymenopterans (*Hymenoptera*), e.g. *Athalia rosae, Atta cephalotes, Atta sexdens, Atta texana, Hoplocampa minuta, Hoplocampa testudinea, Monomorium pharaonis, Solenopsis geminata* and *Solenopsis invicta,*

15

orthopterans (*Orthoptera*), e.g. *Acheta domestica, Blatta orientalis, Blattella germanica, Forficula auricularia, Gryllotalpa gryllotalpa, Locusta migratoria, Melanoplus bivittatus, Melanoplus femur-rubrum, Melanoplus mexicanus, Melanoplus sanguinipes, Melanoplus spretus, Nomadacris septemfasciata, Periplaneta americana, Schistocerca ameri-*

20 *cana, Schistocerca peregrina, Stauronotus maroccanus* and *Tachycines asynamorus ;*

and aphids, such as homopterans (*Homoptera*), e.g. *Acyrthosiphon onobrychis, Adelges laricis, Aphidula nasturtii, Aphis fabae, Aphis forbesi, Aphis pomi, Aphis gossypii, Aphis grossulariae, Aphis schneideri, Aphis spiraecola, Aphis sambuci, Acyrthosiphon*

25 *pisum, Aulacorthum solani, Brachycaudus cardui, Brachycaudus helichrysi, Brachycaudus persicae, Brachycaudus prunicola, Brevicoryne brassicae, Capitophorus horni, Cerosipha gossypii, Chaetosiphon fragaefolii, Cryptomyzus ribis, Dreyfusia nordmannianae, Dreyfusia piceae, Dysaphis radicola, Dysaulacorthum pseudosolani, Dysaphis plantaginea, Dysaphis pyri, Empoasca fabae, Hyalopterus pruni, Hyperomyzus lactu-*

30 *cae, Macrosiphum avenae, Macrosiphum euphorbiae, Macrosiphon rosae, Megoura viciae, Melanaphis pyrarius, Metopolophium dirhodum, Myzodes persicae, Myzus ascalonicus, Myzus cerasi, Myzus varians, Nasonovia ribis-nigri, Nilaparvata lugens, Pemphigus bursarius, Perkinsiella saccharicida, Phorodon humuli, Psylla mali, Psylla piri, Rhopalomyzus ascalonicus, Rhopalosiphum maidis, Rhopalosiphum padi, Rhopa-*

35 *losiphum insertum, Sappaphis mala, Sappaphis mali, Schizaphis graminum, Schizoneura lanuginosa, Sitobion avenae, Trialeurodes vaporariorum, Toxoptera aurantiiand,* and *Viteus vitifolii;*

Examples of aphids such as homopterans (*Homoptera*) are e.g. *Acyrthosiphon onobry-*

40 *chis, Adelges laricis, Aphidula nasturtii, Aphis fabae, Aphis forbesi, Aphis pomi, Aphis gossypii, Aphis grossulariae, Aphis schneideri, Aphis spiraecola, Aphis sambuci, Acyrthosiphon pisum, Aulacorthum solani, Brachycaudus cardui, Brachycaudus helichrysi,*

Brachycaudus persicae, Brachycaudus prunicola, Brevicoryne brassicae, Capitophorus horni, Cerosipha gossypii, Chaetosiphon fragaefolii, Cryptomyzus ribis, Dreyfusia nordmannianae, Dreyfusia piceae, Dysaphis radicola, Dysaulacorthum pseudosolani, Dysaphis plantaginea, Dysaphis pyri, Empoasca fabae, Hyalopterus pruni, Hyperomyzus lactucae, Macrosiphum avenae, Macrosiphum euphorbiae, Macrosiphon rosae, Megoura viciae, Melanaphis pyrarius, Metopolophium dirhodum, Myzodes persicae, Myzus ascalonicus, Myzus cerasi, Myzus varians, Nasonovia ribis-nigri, Nilaparvata lugens, Pemphigus bursarius, Perkinsiella saccharicida, Phorodon humuli, Psylla mali, Psylla piri, Rhopalomyzus ascalonicus, Rhopalosiphum maidis, Rhopalosiphum padi, Rhopalosiphum insertum, Sappaphis mala, Sappaphis mali, Schizaphis graminum, Schizoneura lanuginosa, Sitobion avenae, Trialeurodes vaporariorum, Toxoptera aurantiiand, and Viteus vitifolii;

As outlined above, the use of the compounds of formula I and compositions containing them for combating piercing and sucking pests is preferred, wherein the combating of aphids is especially preferred.

Suitable target seeds and plant propagules are various crop seeds, fruit species, vegetables, spices and ornamental seed, for example corn/maize (sweet and field), durum wheat, soybean, wheat, barley, oats, rye, triticale, bananas, rice, cotton, sunflower, potatoes, pasture, alfalfa, grasses, turf, sorghum, rapeseed, Brassica spp., sugar beet, eggplants, tomato, lettuce, iceberg lettuce, pepper, cucumber, squash, melon, bean, dry-beans, peas, leek, garlic, onion, cabbage, carrot, tuber such as sugar cane, tobacco, coffee, turf and forage, cruciferous, cucurbits, grapevines, pepper, fodder beet, oil seed rape, pansy, impatiens, petunia and geranium, preferably seeds of barley, wheat, oats, sorghum, cotton, soybean, and sugarbeet and seed pieces of potatoes.

In addition, the active ingredient may also be used for the treatment seeds from plants, which tolerate the action of herbicides or fungicides or insecticides owing to breeding, including genetic engineering methods.

For example, the active ingredient can be employed in treatment of seeds from plants, which are resistant to herbicides from the group consisting of the sulfonylureas, imidazolinones, glufosinate-ammonium or glyphosate-isopropylammonium and analogous active substances (see for example, EP-A-0242236, EP-A-242246) (WO 92/00377) (EP-A-0257993, U.S. Pat. No. 5,013,659) or in transgenic crop plants, for example cotton, with the capability of producing Bacillus thuringiensis toxins (Bt toxins) which make the plants resistant to certain pests (EP-A-0142924, EP-A-0193259),

Furthermore, the active ingredient can also be used also for the treatment of seeds from plants, which have modified characteristics in comparison with existing plants consist, which can be generated for example by traditional breeding methods and/or

53

the generation of mutants, or by recombinant procedures). For example, a number of cases have been described of recombinant modifications of crop plants for the purpose of modifying the starch synthesized in the plants (e.g. WO 92/11376, WO 92/14827, WO 91/19806) or of transgenic crop plants having a modified fatty acid
5   composition (WO 91/13972).

The seed treatment application of the active ingredient is carried out by spraying or dusting the seeds before sowing of the plants and before emergence of the plants.

10   The compounds of formula I are effective through both direct and indirect contact and ingestion, and also through trophallaxis and transfer.

For use according to the present invention, the compounds I can be converted into the customary formulations, e.g. solutions, emulsions, suspensions, dusts, powders,
15   pastes and granules. The use form depends on the particular purpose; it is intended to ensure in each case a fine and uniform distribution of the compound on the seed according to the invention.

The formulations are prepared in a known manner, e.g. by extending the active
20   ingredient with solvents and/or carriers or further auxiliaries such as pigemenhts, antifreezing agents emulsifiers and dispersants, if desired. Solvents/auxiliaries, which can be used, are essentially:

water, aromatic solvents (for example Solvesso products, xylene), paraffins (for
25   example mineral fractions), alcohols (for example methanol, butanol, pentanol, benzyl alcohol), ketones (for example cyclohexanone, gamma-butyrolactone), pyrrolidones (NMP, NOP), acetates (glycol diacetate), glycols, fatty acid dimethylamides, fatty acids and fatty acid esters. In principle, solvent mixtures may also be used.

30   Carriers such as ground natural minerals (e.g. kaolins, clays, talc, chalk) and ground synthetic minerals (e.g. highly disperse silica, silicates); emulsifiers such as nonionic and anionic emulsifiers (e.g. polyoxyethylene fatty alcohol ethers, alkylsulfonates and arylsulfonates) and dispersants such as lignin-sulfite waste liquors and methylcellulose.

35   Suitable surfactants are alkali metal, alkaline earth metal and ammonium salts of lignosulfonic acid, naphthalenesulfonic acid, phenolsulfonic acid, dibutylnaphthalene- sulfonic acid, alkylarylsulfonates, alkyl sulfates, alkylsulfonates, fatty alcohol sulfates, fatty acids and sulfated fatty alcohol glycol ethers, furthermore condensates of sulfonated naphthalene and naphthalene derivatives with formaldehyde, condensates
40   of naphthalene or of naphthalenesulfonic acid with phenol, octylphenol, nonylphenol, alkylphenyl polyglycol ethers, tributylphenyl polyglycol ether, tristearylphenyl polyglycol

ether, alkylaryl polyether alcohols, alcohol and fatty alcohol/ethylene oxide condensates, ethoxylated castor oil, polyoxyethylene alkyl ethers, ethoxylated polyoxypropylene, lauryl alcohol polyglycol ether acetal, sorbitol esters, lignin-sulfite waste liquors and methylcellulose and ethylene oxide / propylene oxide block
5   copolymers.

Substances which are suitable for the preparation of directly sprayable solutions, emulsions, pastes or oil dispersions are mineral oil fractions of medium to high boiling point, such as kerosene or diesel oil, furthermore coal tar oils and oils of vegetable or
10   animal origin, aliphatic, cyclic and aromatic hydrocarbons, for example toluene, xylene, paraffin, tetrahydronaphthalene, alkylated naphthalenes or their derivatives, methanol, ethanol, propanol, butanol, cyclohexanol, cyclohexanone, isophorone, strongly polar solvents, for example dimethyl sulfoxide, N-methylpyrrolidone and water.

15   Powders, materials for spreading and dusts can be prepared by mixing or concomitantly grinding the active substances with a solid carrier.

Granules, for example coated granules, impregnated granules and homogeneous granules, can be prepared by binding the active ingredients to solid carriers. Examples
20   of solid carriers are mineral earths such as silica gels, silicates, talc, kaolin, attaclay, limestone, lime, chalk, bole, loess, clay, dolomite, diatomaceous earth, calcium sulfate, magnesium sulfate, magnesium oxide, ground synthetic materials, fertilizers, such as, for example, ammonium sulfate, ammonium phosphate, ammonium nitrate, ureas, and products of vegetable origin, such as cereal meal, tree bark meal, wood meal and
25   nutshell meal, cellulose powders and other solid carriers.

Binders can be added to improve the adhesion of the active materials on the seeds after treatment. Suitable adhesives are block copolymers EO/PO surfactants but also polyvinylalcoholsl, polyvinylpyrrolidones, polyacrylates, polymethacrylates, polybute-
30   nes, polyisobutylenes, polystyrene, polyethyleneamines, polyethyleneamides, poly-ethyleneimines (Lupasol®, Polymin®), polyethers, polyurethans and copolymers de-rived from these polymers.

Optionally, also pigments can be included in the formulation. Suitable pigments or dyes
35   for seed treatment formulations are pigment blue 15:4, pigment blue 15:3, pigment blue 15:2, pigment blue 15:1, pigment blue 80, pigment yellow 1, pigment yellow 13, pig-ment red 112, pigment red 48:2, pigment red 48:1, pigment red 57:1, pigment red 53:1, pigment orange 43, pigment orange 34, pigment orange 5, pigment green 36, pigment green 7, pigment white 6, pigment brown 25, basic violet 10, basic violet 49, acid red
40   51, acid red 52, acid red 14, acid blue 9, acid yellow 23, basic red 10, basic red 108.

anti-freezing agents such as glycerin, ethylene glycol, propylene glycol can be added to the formulation.

In general, the formulations comprise from 0.01 to 95% by weight, preferably from 0.1 to 90% by weight, of the active ingredient. The active ingredients are employed in a purity of from 90% to 100%, preferably 95% to 100% (according to NMR spectrum).

The following are examples of formulations:

1. Products for direct application or for application after dilution with water

A)   Soluble concentrates (LS)
10 parts by weight of the active compounds are dissolved in water or in a water-soluble solvent. As an alternative, wetters or other auxiliaries are added. The active compound dissolves upon dilution with water.

B)   Dispersible concentrates (DC)
20 parts by weight of the active compounds are dissolved in cyclohexanone with addition of a dispersant, for example polyvinylpyrrolidone. Dilution with water gives a dispersion.

C)   Emulsifiable concentrates (EC)
15 parts by weight of the active compounds are dissolved in xylene with addition of calcium dodecylbenzenesulfonate and castor oil ethoxylate (in each case 5% strength). Dilution with water gives an emulsion.

D)   Emulsions (ES)
40 parts by weight of the active compounds are dissolved in xylene with addition of calcium dodecylbenzenesulfonate and castor oil ethoxylate (in each case 5% strength). This mixture is introduced into water by means of an emulsifier (Ultraturax) and made into a homogeneous emulsion. Dilution with water gives an emulsion.

E)   Suspensions (FS)
In an agitated ball mill, 20 parts by weight of the active compounds are comminuted with addition of dispersant, wetters and water or an organic solvent to give a fine active compound suspension. Dilution with water gives a stable suspension of the active compound.

F)   Water-dispersible granules and water-soluble granules (WG, SG)
50 parts by weight of the active compounds are ground finely with addition of dispersants and wetters and made into water-dispersible or water-soluble granules by

means of technical appliances (for example extrusion, spray tower, fluidized bed). Dilution with water gives a stable dispersion or solution of the active compound.

G)   Water-dispersible powders and water-soluble powders (SS, WS)

5   75 parts by weight of the active compounds are ground in a rotor–stator mill with addition of dispersant, wetters and silica gel. Dilution with water gives a stable dispersion or solution with the active compound.

H) Gel-Formulation (GF)

10

In an agitated ball mill, 20 parts by weight of the active compounds are comminuted with addition of 10 parts by weight of dispersants, 1 part by weight of a gelling agent wetters and 70 parts by weight of water or of an organic solvent to give a fine active compounds suspension. Dilution with water gives a stable suspension of the active

15   compounds, whereby a formulation with 20% (w/w) of active compounds is obtained.

2.   Products to be applied undiluted

I)   Dustable powders (DS)

20   5 parts by weight of the active compounds are ground finely and mixed intimately with 95% of finely divided kaolin. This gives a dustable product.

J)   Granules (GR, FG, GG, MG)
0.5 part by weight of the active compounds is ground finely and associated with 95.5%

25   carriers. Current methods are extrusion, spray-drying or the fluidized bed. This gives granules to be applied undiluted.

Conventional seed treatment formulations include for example flowable concentrates FS, solutions LS, powders for dry treatment DS, water dispersible powders for slurry

30   treatment WS, water-soluble powders SS and emulsion ES and EC. Application to the seeds is carried out before sowing, either directly on the seeds or after having pregerminated the latter.

In a preferred embodiment, a FS formulation is used. Typcially, a FS formulation may

35   comprise 1-800 g/l of active ingredient, 1-200 g/l Surfactant, 0 to 200 g/l antifreezing agent, 0 to 400 g/l of binder, 0 to 15 g/l of a pigment and up to 1 liter of a solvent, preferably water.

The active ingredients can be used as such, in the form of their formulations or the use

40   forms prepared therefrom, eg. in the form of directly sprayable solutions, powders, gels, suspensions or dispersions, emulsions, oil dispersions, pastes, dustable products, materials for spreading, or granules, microcapsules (CS), pellets or tablets, by means

of spraying, atomizing, dusting, spreading or pouring. The use forms depend entirely on the intended purposes; it is intended to ensure in each case the finest possible distribution of the active ingredients according to the invention.

5   Aqueous use forms can be prepared from emulsion concentrates, pastes or wettable powders (sprayable powders, oil dispersions) by adding water. To prepare emulsions, pastes or oil dispersions, the substances, as such or dissolved in an oil or solvent, can be homogenized in water by means of a wetter, tackifier, dispersant or emulsifier. Alternatively, it is possible to prepare concentrates composed of active substance,

10   wetter, tackifier, dispersant or emulsifier and, if appropriate, solvent or oil, and such concentrates are suitable for dilution with water.

The active ingredient concentrations in the ready-to-use products can be varied within relatively wide ranges. In general, they are from 0.01 to 80%, preferably from 0.1 to

15   50 %.

Various types of oils, wetters, adjuvants, herbicides, fungicides, other pesticides, or bactericides may be added to the active ingredients, if appropriate just immediately prior to use. These agents usually are admixed with the agents according to the

20   invention in a weight ratio of 1:100 to 100:1.

The application rates vary with the crops. In the treatment of seed, the application rates of the compounds of formula I are generally from 0.1 g to 10 kg of compounds of formula I per 100 kg of seeds, desirably 0.25 kg of compounds of formula I per 100 kg of

25   seeds. In general, rates from 1 g to 5 kg compounds of formula I per 100 kg of seeds, more desirably from 1 g to 2.5 kg per 100 kg of seeds are suitable. For specific crops such as lettuce the rates can be higher.

The term seed treatment comprises all suitable seed treatment techniques known in

30   the art, such as seed dressing, seed coating, seed dusting, seed soaking and seed pelleting.

In the control of pests, the application of the compound of formula I or of the composition comprising it is carried out by spraying or dusting the seeds or the soil (and

35   thereby the seeds) after sowing, wherein treating the seeds prior to sowing is preferred.

A further subject of the invention is a method of treating the seed in the seed drill with a granular formulation containing the active ingredient or a composition comprising it, with optionally one or more solid or liquid, agriculturally acceptable carriers and/or op-

40   tionally with one or more agriculturally acceptable surfactants. This method is advantageously employed in seedbeds of cereal, maize, cotton and sunflower.

For cereals and maize, the rates for compounds of formula I are between 50 and 1000 g/ha.

5   The invention also relates to the seeds, and especially the true seed comprising, that is, coated with and/or containing, a compound of formula I or a composition comprising it. The term "coated with and/or containing" generally signifies that the active ingredient is for the most part on the surface of the propagation product at the time of application, although a greater or lesser part of the ingredient may penetrate into the propagation

10 product, depending on the method of application. When the said propagation product is (re)planted, it may absorb the active ingredient.

The seed comprises the inventive mixtures in an amount of from 0.1 g to 100 kg per 100 kg of seed.

15

The following list of pesticides together with which the compounds according to the invention can be used, is intended to illustrate the possible combinations, but not to impose any limitation:

20 The insecticide is selected from the group consisting of

Organophosphates: Acephate, Azinphos-methyl, Chlorpyrifos, Chlorfenvinphos, Diazi-
        non, Dichlorvos, dimethylvinphos, dioxabenzofos, Dicrotophos, Dimethoate, Di-
        sulfoton, Ethion, EPN, Fenitrothion, Fenthion, Isoxathion, Malathion, Methamido-
25   phos, Methidathion, Methyl-Parathion, Mevinphos, Monocrotophos, Oxydemeton-
        methyl, Paraoxon, Parathion, Phenthoate, Phosalone, Phosmet, Phosphamidon,
        Phorate, Phoxim, Pirimiphos-methyl, Profenofos, Prothiofos, primiphos-ethyl,
        pyraclofos, pyridaphenthion, Sulprophos, Triazophos, Trichlorfon; tetrachlorvin-
        phos, vamidothion;

30
Carbamates: Alanycarb, Benfuracarb, Bendiocarb, Carbaryl, BPMC, carbofuran, Car-
        bosulfan, Fenoxycarb, Furathiocarb, Indoxacarb, Methiocarb, Methomyl, Oxamyl,
        Pirimicarb, Propoxur, Thiodicarb, Triazamate;

35 Pyrethroids: Bifenthrin, Cyfluthrin, cycloprothrin, Cypermethrin, Deltamethrin, Esfen-
        valerate, Ethofenprox, Fenpropathrin, Fenvalerate, Cyhalothrin, Lambda-
        Cyhalothrin, Permethrin, Silafluofen, Tau-Fluvalinate, Tefluthrin, Tralomethrin,
        alpha-cypermethrin, zeta-cypermethrin, permethrin;

40 Neonicotinoides: acetamiprid, clothianidin, Dinotefuran, Flonicamid, Imidacloprid,
   Nitenpyram, Thiamethoxam, thiacloprid;

59

Arthropod growth regulators: a) chitin synthesis inhibitors: benzoylureas: Chlorflua-
zuron, Diflubenzuron, Flucycloxuron, Flufenoxuron, Hexaflumuron, Lufenuron,
Novaluron, Teflubenzuron, Triflumuron; Buprofezin, Diofenolan, Hexythiazox,
Etoxazole, Clofentazine; b) ecdysone antagonists: Halofenozide, Methoxy-
fenozide, Tebufenozide; c) juvenoids: Pyriproxyfen, Methoprene, Fenoxycarb;
d) lipid biosynthesis inhibitors: Spirodiclofen;

Various: Abamectin, Acequinocyl, Amitraz, Azadirachtin, bensultap Bifenazate, Cartap,
Bensultap,Chlorfenapyr, Chlordimeform, Cyromazine, Diafenthiuron, Diofenolan,
Emamectin benzoate, Endosulfan, Ethiprole, Fenazaquin, Fipronil, Formetanate, For-
metanate hydrochloride, gamma-HCH Hydramethylnon, Indoxacarb, isoprocarb, metol-
carb, nitenpyram, Pyridaben, Pymetrozine, Spinosad, Sulfur, Tebufenpyrad, Thiocy-
clam, XMC, xylylcarb, Pyridalyl, Pyridalyl, Flonicamid, Fluacypyrim, Milbemectin, Spi-
romesifen, Flupyrazofos, NC 512, Tolfenpyrad, Flubendiamide, Bistrifluron, Ben-
clothiaz, Pyrafluprole, Pyriprole, Amidoflumet, Flufenerim, Cyflumetofen, Acequinocyl,
Lepimectin, Profluthrin, Dimefluthrin, Metaflumizone, a tetronic acid of the following
formula
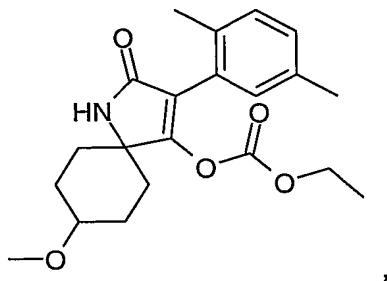
an aminoiso-thiazole of the following formula
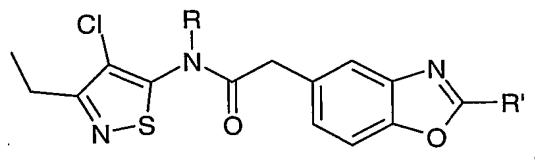
in which
R is -CH₂O CH₃ or H; and
R' is -CF₂CF₂ CF₃;

an anthranilamide of the following formula
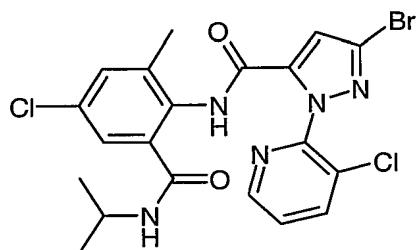
In general, "pesticidally effective amount" means the amount of active ingredient needed to achieve an observable effect on growth, including the effects of necrosis,
5   death, retardation, prevention, and removal, destruction, or otherwise diminishing the occurrence and activity of the target organism. The pesticidally effective amount can vary for the various compounds/compositions used in the invention. A pesticidally effective amount of the compositions will also vary according to the prevailing conditions such as desired pesticidal effect and duration, weather, target species, locus, mode of
10   application, and the like.

The pesticidal action of the compounds is demonstrated by the following experiments:

Biological example 1:   Experimental compounds set forth in Table B.1 were evaluated
15   to determine their insecticidal efficacy for control of foliar aphids when applied as seed treatments.

Table B.1:

(I)
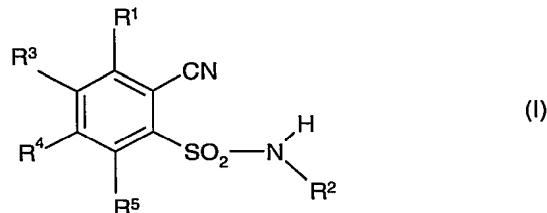
20

Example no.	R^3	R^5	R^1	R^4	R^2	m.p. [°C]
30	H	H	CH_3	H	$-CH_2CH_3$	98-103
31	H	H	CH_3	H	prop-2-ynyl	104-107
66	H	H	$OCHF_2$	H	$-CH_2-CH_3$	98-100
89	H	H	$OCHF_2$	H	CH_3	122-128
103	H	H	$OCHF_2$	H	$-CH_2-CH_2-CH_3$	54-58
106	H	H	$OCHF_2$	H	$-CH-(CH_3)_2$	72-74
107	H	H	$OCHF_2$	H	$-CH_2-CHF_2$	92-96

Compound Preparation

Experimental compounds were formulated by dissolving 10.5 mg technical material in 45 µl acetone then adding 255 µl 0.05% aqueous TWEEN 20 (polyoxyethylene (20) sorbitan monolaurate).

5   Cotton Seed Treatment

Twenty-five cotton seeds (variety Sure-Grow 747) were placed in a 20-ml glass vial and then 150 µl of the compound formulation were pipetted onto the side of the vial just above the seeds. Vials were vortexed for 30 seconds to rapidly spin the seeds within
10   the vial to apply the compound to the seeds. Treated seeds were then air-dried. Solvent blank controls are created by treating seeds with a 15% acetone / 0.05% aqueous TWEEN 20 solution.

       Insecticide Efficacy Evaluation
15

Twenty-four cotton seeds were planted in Metro Mix potting mix in twelve 7.6-cm-square pots, 2 seeds per pot. Crop selectivity was determined by comparing seedling emergence and recording any foliar and shoot symptoms.

20   Seedling plants were thinned to one plant per pot. At the cotyledon stage 6 plants per treatment were infested with cotton aphids (*Aphis gossypii*) by manually transferring circa 25 aphids to each plant on a piece of leaf tissue cut from a donor plant that was infested with aphids. The exact number of aphids transferred to each plant was recorded.
25

Four days after infestation, live aphids on each plant were counted. The aphid population increase for each control plant was calculated by dividing the final aphid population by the initial population. The median aphid population increase on the solvent blank controls was then calculated. This median aphid population increase was used to de-
30   termine the expected final aphid population expected on each treated plant by multiplying the initial aphid population on the treated plant by the median aphid population increase of the solvent blank controls.

All compounds listed in table B.1 showed significant reduction of the aphid population.
35   Compounds 30,31 and 66 showed a reduction of more than 45% in aphid population and compounds 89,103,106 and 107 showed a reduction of more than 95% in aphid population.

Claims:

1.   A method for the protection of seeds from soil insects and of the seedlings' roots
     and shoots from soil and foliar insects comprising contacting the seeds before
     sowing and/or after pregermination with a 2-cyanobenzenesulfonamide compound
     of the general formula I

(I)
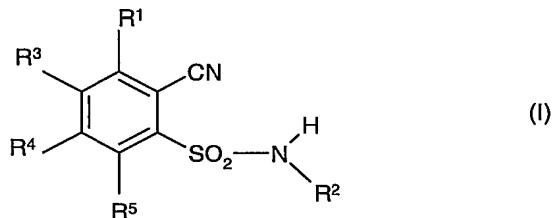
where

R^1 is C$_1$-C$_4$-alkyl, C$_1$-C$_4$-haloalkyl, C$_1$-C$_4$-alkoxy or C$_1$-C$_4$-haloalkoxy;

R^2 is hydrogen, C$_1$-C$_6$-alkyl, C$_2$-C$_6$-alkenyl, C$_2$-C$_6$-alkinyl, C$_3$-C$_8$-cycloalkyl or
         C$_1$-C$_4$-alkoxy, wherein the five last-mentioned radicals may be unsubsti-
         tuted, partially or fully halogenated and/or may carry one, two, or three
         radicals selected from the group consisting of C$_1$-C$_4$-alkoxy, C$_1$-C$_4$-alkylthio,
         C$_1$-C$_4$-alkylsulfinyl, C$_1$-C$_4$-alkylsulfonyl, C$_1$-C$_4$-haloalkoxy, C$_1$-C$_4$-
         haloalkylthio, C$_1$-C$_4$-alkoxycarbonyl, cyano, amino, (C$_1$-C$_4$-alkyl)amino, di-
         (C$_1$-C$_4$-alkyl)amino, C$_3$-C$_8$-cycloalkyl and phenyl, it being possible for phenyl
         to be unsubstituted, partially or fully halogenated and/or to carry one, two or
         three substituents selected from the group consisting of C$_1$-C$_4$-alkyl, C$_1$-C$_4$-
         haloalkyl, C$_1$-C$_4$-alkoxy, C$_1$-C$_4$-haloalkoxy; and

R^3, R^4 and R^5 are independently of one another selected from the group consist-
         ing of hydrogen, halogen, cyano, nitro, C$_1$-C$_6$-alkyl, C$_3$-C$_8$-cycloalkyl, C$_1$-C$_4$-
         haloalkyl, C$_1$-C$_4$-alkoxy, C$_1$-C$_4$-alkylthio, C$_1$-C$_4$-alkylsulfinyl, C$_1$-C$_4$-
         alkylsulfonyl, C$_1$-C$_4$-haloalkoxy, C$_1$-C$_4$-haloalkylthio, C$_2$-C$_6$-alkenyl, C$_2$-C$_6$-
         alkinyl, C$_1$-C$_4$-alkoxycarbonyl, amino, (C$_1$-C$_4$-alkyl)amino, di-(C$_1$-C$_4$-
         alkyl)amino, aminocarbonyl, (C$_1$-C$_4$-alkyl)aminocarbonyl and di-(C$_1$-C$_4$-
         alkyl)aminocarbonyl;

     or the enantiomers or salts thereof,

     in pesticidally effective amounts.

2.   A method as claimed in claim 1 wherein in the compound of formula I R^1 is C$_1$-C$_2$-
     alkyl, C$_1$-C$_2$-alkoxy or C$_1$-C$_2$-haloalkoxy.

3. A method as claimed in claim 2, wherein in the compound of formula I as claimed in claim 2 R^1 is methyl.

4. A method as claimed as claimed in claim 2 wherein in formula I R^1 is methoxy.

5. A method as claimed in claim 1 wherein in formula I R^1 is C_1-C_4-haloalkoxy.

6. A method as claimed in claim 5 wherein in formula I R^1 is C_1-haloalkoxy, in particular difluormethoxy.

7. A method as claimed in claim 1 wherein in formula I R2 is selected from the group consisting of hydrogen, a hydrocarbon radical having from 1 to 4 carbon atoms, C_1-C_4-haloalky, C_1-C_4-alkoxy-C_1-C_4-alkyl, C_1-C_4-alkylthio-C_1-C_4-alkyl and C_2-C_4-alkinyl.

8. A compound as claimed in claim 7 wherein R^2 is hydrogen, methyl, ethyl, 1-methylethyl, prop-2-yn-1-yl or 2-difluoroethyl.

9. A method as claimed in claim 1 where in formula I at least one of the radicals R^3, R^4 and R^5 is different from hydrogen.

10. A method as claimed in claim 9 where R^3 is halogen.

11. A method as claimed in claim 1 where R^1 is difluormethoxy and R^3, R^4 and R^5 represent hydrogen.

12. A method as claimed in claim 1 where in formula I the radicals R^3, R^4 and R^5 represent hydrogen.

13. The method according any of claims 1 to 12, wherein the compound of formula I is applied in an amount of from 0,1 g to 10 kg per 100 kg of seeds.

14. A method according to any of claims 1 to 13, wherein of the resulting plant's roots and shoots are protected.

15. A method according to any of claims 1 to 14, wherein the resulting plant's' shoots are protected from aphids.

16. The use of the compounds of formula I as defined in any of claims 1 to 12 for the protection of seeds from soil pests and the protection of the resulting plant's roots and shoots from soil pests or foliar pests.

17.   The use of the compounds of formula I as defined in any of claims 1 to 12 for the
       protection of the resulting plant's shoots from aphids

18.   Seed comprising the compound of formula I as defined in any of claims 1 to 12 in
       an amount of from 0.1 g to 10 kg per 100 kg of seed.